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Urban Waterfront Lands

COMMITTEE ON URBAN WATERFRONT LANDS

Environmental Studies Board
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National Research Council

NATIONAL ACADEMY OF SCIENCES
Washington, D.C. 1980

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Preface

Proceeding from the conviction that urban waterfront lands constitute an especially important but poorly understood national resource, the Environmental Studies Board in 1977 initiated steps to sharpen our perspective on this resource and on some of the social and technological factors that affect its development and use. Urban waterfront lands in the United States present a cycle of development, deterioration, neglect, and reuse resulting from an uncoordinated interaction of economic factors, changes in technology, social forces, and political decisions. Accordingly, urban ports and harbors are often the foci of important environmental issues created by concentrations of population, commerce, and industry in strategic locations with limited capacity to support them. The relatively recent surge of public interest in "reclaiming" urban waterfront lands for recreational use in combination with renewed commercial and industrial activity is evidence of an emerging political maturity and an awareness of the potential of all our various resources. Along with steadily increasing pressures for change in the use of older waterfront areas, new technological possibilities for moving goods and materials through the coastal zone, and impending decisions concerning deepwater ports and development of the outercontinental shelf, there is need for environmental perspective on current proposals and plans for urban waterfront lands to guide local as well as national development policies.

The cases and issues selected for this study concentrated primarily on coastal, rather than riverine, areas and ports. The limitation was imposed

Modern containerized cargo handling crane, Locust Point Marine Terminal, Baltimore, Maryland, 1978.

by the amount of funds available. Nevertheless, many of the results and insights to be found here are applicable to waterfront lands in cities on the Great Lakes and inland river systems as well as those in coastal cities on the Atlantic and Pacific Oceans, and the Gulf of Mexico. The cities selected for consideration were chosen because their ports reflect a diversity of waterfront uses and cargo-handling technologies, a range of geographic factors, and differences in time between original settlement and recent experience with waterfront land use and development. In addition, the cities covered the spectrum from waterfront lands lying fallow to those under intensive new development.

The study was made possible by funds from the U.S. Army Corps of Engineers. Particular encouragement of the project was received from the former Chief of Engineers, the late Lt. General William Gribble, and from Lt. General John Morris, Chief of Engineers since 1976. Project liaison was provided by Colonel Ted Bishop and Mr. Walter Schilling.

In conducting research for the project, the Study Committee visited the Ports of Baltimore and Oakland-San Francisco. Arrangements for the site visits and extensive briefings on development issues in each area were made by Mr. Larry Reich, Baltimore's Director of Planning, and by Mr. Walter Abernathy, Director of the Port of Oakland, respectively. The Study Committee appreciates their efforts in support of its reconnaissance for the project as well as their participation as authors and symposium discussants. Mr. Rai Okamoto, San Francisco Planning Director, Mr. Walter Gaby of the San Francisco Department of City Planning, and Mr. George Rockrise and Mr. Boris Dramov, consultants to the City of San Francisco for its Northern Waterfront Study, contributed significantly to the study through their participation in briefings in the Bay Area and their provision of research materials.

The ultimate basis for the Urban Waterfront Lands Study report was a symposium conducted at the Massachusetts Institute of Technology in March 1979, at which a series of commissioned papers was considered. The authors of those papers have in every case provided new information and insights helpful to the realization of the project's objectives. The commissioned papers are published as independent parts of the report and, while the papers do not necessarily reflect the views of the Study Committee or of the symposium participants, the Study Committee appreciates the contribution to the project made by each author. The chairman and the Committee are also grateful to the symposium attendees for their lively and creative participation.

The Urban Waterfront Lands Study Committee—especially its chairman—is indebted to the Executive Secretary of the Environmental Studies Board, Dr. Raphael G. Kasper, who was responsible for

Urban Waterfront Lands

Dilapidated waterfront pier and shed with lobster pots, Gloucester, Massachusetts, 1962.

Overview

INTRODUCTION

Urban waterfront lands are a special class of national resource. They are unique in their potential to afford society diversified opportunities for economic development, public enjoyment, and civic identity. Changing technologies affecting air, land, and waterborne transportation and concurrent public concern for environmental quality have interacted powerfully to bring urban waterfronts under consideration by a wide variety of interests.

Urban waterfronts have become the focus of many current issues created by the often conflicting pressures of population and commerce. As patterns of commerce have changed, the nature and use of urban waterfronts have changed. At one time, the commercial life of coastal cities depended almost exclusively on the activities of their ports, but as land and air transport of goods and people developed, the attention of city planners and the private sector turned increasingly inland. The shift in attention, together with recent revolutionary changes in cargo handling and steadily decreasing waterborne passenger travel, has left large sections of urban waterfront land unused or underused. These sections now present both problems and opportunities for cities and their residents. The effective reuse of waterfront sites, buildings, and piers for necessary economic development and for recreational and cultural activities presents a challenge to those who plan and decide upon urban

land use and accordingly affects the identity and environmental quality of cities.

For some time, the Environmental Studies Board has noted and discussed the cycle of development, deterioration, neglect, and reuse of urban waterfront lands and the range of environmental issues inherent in the cycle. It was the impression of the Board that information on the subject was extensive but fragmented and not well evaluated or analyzed. Valuable data were known to exist in reports of the Corps of Engineers in support of its statutory responsibilities; in reports of commissions such as that on Marine Science, Engineering, and Resources; in commissioned studies such as the National Estuary Study and the National Estuarine Pollution Study; in a number of studies examining resource potentials of the outer continental shelf and related deepwater port issues; in traditional histories of ports and cities; and in numerous planning studies for urban waterfront areas. The Office of Coastal Zone Management, through its programs of the past 5 years, has generated or amassed much valuable information about coastal zones, primarily those that lie outside the more urbanized areas and major ports. Seeking to establish a perspective on these data and the urban waterfront land resource in general, the Environmental Studies Board established a Steering Committee chaired by Dorn McGrath of the George Washington University. The Committee held several meetings and visited the Ports of Baltimore and San Francisco/Oakland while planning a symposium on urban waterfront lands. The symposium, attended by 65 participants in Cambridge, Massachusetts, in March 1979, was based upon the 10 commissioned papers presented in this report and related research conducted by Professor McGrath, other members of the Steering Committee, and staff members of the Environmental Studies Board and the George Washington University Department of Urban and Regional Planning.

This report provides a summary of the principal findings and ideas presented in the papers commissioned for the symposium and offers a perspective that the Committee believes should be considered in public policy making affecting the use of urban waterfront lands.

CHANGES IN WATERFRONT LAND USE: CARGO HANDLING

Rapidly evolving technology in ocean shipping and in the handling of cargo has created major changes in the use of waterfront lands.

The spectacular growth in size of bulk petroleum carriers has created a need for new and specialized receiving terminals, which normally cannot

be located at traditional waterfront sites and, in fact, do not need to be. The size and draft of the largest crude oil carriers prohibit their entry into any U.S. ports; but this apparent disadvantage leads to the possibility of reduced reliance on urban fuel terminal facilities, with the potential advantages of less risk of critical fuel spillage or explosion and reduced harbor traffic congestion. Moreover, the construction of submarine pipelines connecting offshore terminals with onshore refineries and tank farms affords options for locating such industrial facilities on sites well removed from the actual waterfront and perhaps better related to land transportation systems. The obsolescence of many older riverfront and inner harbor fuel terminals, progressive and relentless siltation of navigation channels, rising fears of oil-spill disasters, and emerging demands for the upgrading and expansion of nearby neighborhoods and commercial facilities all combine to present many cities with interesting opportunities for redevelopment of their waterfront industrial sites.

A small but growing trade in shipping and storing hazardous bulk liquids—like liquefied energy gases and toxic chemicals—on urban waterfronts has created problems of public safety and raised questions about the compatibility of such activity with other urban waterfront land uses. The need for substantial buffer zones and the pervasive safety regulations demanded by this hazardous activity are quite likely to force facilities into nonurban areas in the future.

A related, but opposite effect of evolving technology in ocean shipping is evident in the construction of vast container terminals, where specialized weight-handling equipment transfers containerized cargo to storage and transshipment facilities or directly to rail or truck carrier systems. Integration of ship design, cargo handling gear, terminal storage area, and land transportation systems has, in many cases, rendered obsolete the traditional finger pier and much of the break-bulk cargo vessel system.

Shipping lines and ports in the United States were leaders in the trend toward containerization and, as a consequence, U.S. urban waterfronts were among the first to reflect the ramifications of the new technology. Container ship terminals greatly alter the traditional demands on urban waterfront acreage. In general, the new systems require fewer berths and less frontage on shipping channels than the old ones but considerably greater acreage for backup facilities. Each containership berth typically requires 16 acres of terminal storage and handling area, as well as land-consuming highway and railroad facilities, all of which require a high level of capital investment. Few of the older port cities, particularly along the East Coast, are geographically prepared to provide such

acreage, and competition among those that can is severe. Where shipping interests are sufficiently strong, even in older and perhaps functionally obsolete ports, competition among ports may create demand for the construction of containership facilities in new locations remote from the traditional urban waterfront. The mixed blessing of such construction may be that while it makes inner city port facilities available for other more diversified uses, it also forces the spread of industrial port facilities into outlying and often environmentally sensitive sites. All these impacts of the recent growth of container shipping are evident in the major port cities of the United States, yet there are weaknesses in the ability of markets to match supply and demand for such installations. It seems inevitable that major, and often futile, speculative investments in containership facilities and their requisite navigation channels will be made under pressures of intercity and interregional competition.

CHANGES IN WATERFRONT LAND USE: AIRPORTS

The constant pursuit of greater speed and economies of scale through technology in all major modes of transportation has profoundly affected the use of urban waterfront lands.

This is particularly true of aviation, where the rapid development of larger, faster and noisier aircraft in the era following World War II has required ever larger sites to accommodate airport runways and support facilities. Often by accident, but sometimes by design, ocean and riverfront locations in cities throughout the United States have been effectively preempted for airport use. This was due, in part, to the availability of waterfront lands in the early postwar years, even though many airports, such as John F. Kennedy Airport in New York, Logan Airport in Boston, Lindbergh Field in San Diego, and San Francisco International Airport, now operate under severe restrictions necessitated by their propensity to generate intolerable noise over settled areas far beyond their boundaries. The blighting effect of such noise, while not always sufficient to deter incompatible development in areas underlying approach and departure paths, regularly results in environmental degradation and sociopolitical conflict in many urban waterfront areas. Problems of the impact of aircraft noise on nearby residential neighborhoods, encroachment of airport-related land use on surrounding communities, and congestion of highways and roads with ground traffic generated by airports are common to inland airports as well. But waterfront airports, located relatively close to intown air travel demand centers, increase the pressures to rationalize adverse environmental

effects for the sake of convenient access, even though large numbers of residents may be affected.

The expansion of waterfront airport areas by filling and land acquisition experienced in the 1950's and 1960's has ceased, quite likely permanently. Increasing competition for close-in sites among many different potential users, including residents, businesses, and institutions, renders landward airport extension impractical. Moreover, emergent ecological considerations often proscribe airport expansion by the traditional process of filling in marshes, mudflats, or adjacent shallow water. This creates a dilemma for transportation planners. Unabated growth in passenger and air cargo stresses the current system. But the high capital investment involved in airports, combined with public opposition to new airports near other settled areas, effectively prevents the replacement of most existing facilities, even though their original sites may be poorly located in relation to subsequent suburban industrial and residential growth. Therefore it is probably only realistic to expect airports to continue to occupy a substantial portion of urban waterfront lands and to subject still larger areas to excessive noise for the foreseeable future. Slow but steady trends indicating a buildup of nighttime air freight activity and a rapid growth of round-the-clock jet operations by air express services suggest that the pressures of the noise problem will increase, even if fuel costs limit passenger travel to some degree.

Accordingly, planning for the use of urban waterfront lands near major airports must be refined to include consideration of environmental factors like noise and the adoption of appropriate development controls. In the past, both planning and regulation of urban waterfront development in environmentally sensitive areas have been relatively ineffectual at local, state, and federal levels. The result has been that neither the airports nor the urban waterfront lands adjacent to them have been able to realize their full resource potential.

DISTRIBUTION OF TRANSPORTATION FACILITIES

As a result of the heavy capital requirements for both ships and ports, container cargo handling has tended to concentrate at a few port locations. Shipping lines have acquired high cost vessels that no longer can afford to call at large numbers of ports picking up and delivering small amounts of cargo. Ports have been required to develop costly fixed improvements, heavy-duty pavement, extra-strength concrete wharves, and special cranes for handling containers. Institutional arrangements

have been altered as well. On the West Coast, for example, some ports have entered into long-term agreements with shipping lines, running as long as 25 years, to guarantee previously unreliable cargo flows. Many shipping lines have sacrificed flexibility in use of the ports in exchange for capital-intensive, specially designed marine terminals where their berths are guaranteed. Thus, for example, three major load centers have developed on the West Coast to handle container cargo: Seattle, Oakland, and Los Angeles/Long Beach. Other West Coast ports have continued to operate as limited containerized centers or as specialized ports as more and more high value general cargo shifts to the containerized mode. Specialized cargo movments vary widely and include such commodities as steel, automobiles, forestry products, and export scrap. But the concentration of containerized ports has not necessarily limited the port pressure for a share of the urban waterfront. In the San Francisco Bay area, forecasts of future cargo demands prepared by a variety of organizations all predict continued need for port expansion.

Containerization and the resulting ease of intermodal interchange of cargo from ship to either truck or rail have influenced a redistribution of the U.S. maritime trade among the East, West, and Gulf coasts. For example, prior to containerization, approximately two-thirds of the cargo handled through West Coast ports either came from or was destined for areas west of the Rocky Mountains. Today, two-thirds of the West Coast hinterland cargo moves to areas on the eastern side of the Rockies. For the containerized cargo port, the traditional hinterland area has expanded greatly to reach from seaboard to seaboard.

There are other, related changes in the pattern of cargo distribution. Cargo in increasing amounts is bypassing the Panama Canal and crossing the United States by rail instead of following the traditional water routes from the Far East to the East Coast or from Europe to the West Coast. In 1970, 19 percent of the total U.S. maritime imports was handled through West Coast ports. By 1978, the West Coast share of the maritime exports market had grown to 29 percent. For U.S.-Far East trade, the West Coast share of the market from 1970 to 1978 increased from 42 to 73 percent for exports and from 36 to 60 percent for imports.

The interrelationship of the development of containerized cargo load centers and specialized ports, together with a shifting distribution pattern for maritime cargo, has had and will continue to have a significant impact on the urban waterfront in the United States. Some traditional port areas may find that the decreased pressure for marine terminal development will open up opportunities for alternative uses. In other areas, the concentration of facilities and redistribution of marine traffic

will result in increased pressure for port development and may limit or conflict with alternative opportunities for urban waterfront land use.

HAZARDS TO URBAN WATERFRONT POPULATIONS

The concentration of residential populations and commercial and industrial facilities along urban waterfronts can result in great aggregate damage from storm-driven floods. The issues of protection against such damage by means of flood control structures or limitations on land use are quite similar to those for urban lands within river flood plains. Prevention of loss of life by warning and evacuation, rather than by insuring that land use on waterfronts does not exacerbate the potential risk, seems to be the prevalent response to this problem.

Man-made hazards are seen in a different light. Resistance to the siting of liquified energy gas marine terminals and toxic chemical storage and processing facilities on the waterfront has greatly increased in recent years. The transportation of hazardous materials by truck or rail from waterfront facilities has enlarged the affected population and led to demands for banning movement of such materials through the urban core and residential areas. Given the sensitivity of the public to the effects on human health of accidental releases of combustible, radioactive, toxic, carcinogenic, mutagenic, and teratogenic agents, it is likely that movement, storage, and processing of such materials will be displaced to locations well beyond the urban environs.

RECREATIONAL AND CULTURAL USES OF WATERFRONTS

Opportunities for new uses of city waterfronts arising from recent, rapid technological, industrial, and commercial changes coincide with growing national interest in environmental quality, recreation, cultural programs, historic preservation, and the overall desirability of cities as places to live. Waterfronts are seen as offering major opportunities for renewal, for shedding some of the most conspicuous dilapidation of the past, and for opening coastal cities to the world. Many city residents feel their cities have neglected too long the quality of the waterfront environment, and providing opportunities for the public to use and enjoy the waterfront is now a major concern in many cities. The rising public interest has been backed by federal, state, and local legislation designed to enhance the quality of the physical resources of the waterfront. The 1978 Urban Recreation Study by the Department of the Interior identified urban waterfronts as a key recreation challenge: "Redevelopment of under-

used or derelict lands, waters and historical districts within cities has high potential for meeting both neighborhood and city-wide recreation needs . . . " (U.S. Department of the Interior 1978).

As leisure time has increased and disposable income has risen, interest in recreation has mounted simultaneously. The growth in recreational activity is not just in the traditional physical sports, but in a broader range of programs concerned with total fulfillment of the individual. City waterfronts offer opportunities for such fulfillment for millions of city dwellers. City after city has undertaken studies of waterfront redevelopment, and many, including Baltimore, Boston, Seattle, San Francisco, Savannah, Miami, and Galveston, have launched major programs to open their waterfronts for public recreational uses.

There are two important areas of concern in designing waterfront land for recreation: providing access to the waterfront, and providing sites and facilities to support the recreational activity. Some port authorities, as in Oakland, are attempting to combine facilities areas for recreational fishing, picnicking, and sightseeing with commercial activities. Cooperative public and private ventures have emphasized cultural aspects of the waterfronts through seaport museums, like the South Street Seaport Museum in New York, or the historic ships docked at downtown wharves in many cities. New recreational opportunities are being created as derelict piers are replaced with modern marinas as in the harbors of Boston and Baltimore.

Aside from their uses for recreation, the buildings and piers of city waterfronts are undergoing recycling. Historic preservation programs have made possible the adaptive reuse of old buildings. Thus, a once underused wharf like Lewis Wharf in Boston is now a popular apartment building, and other old commercial waterfront buildings in Savannah, San Francisco, and elsewhere have become fashionable offices and shops. Since many waterfronts are the oldest commercial parts of cities, their history, architecture, and culture often justify protection in historic districts. Historic preservation, however, does not necessarily imply freezing the activities of waterfront areas; innovative planning can allow for new uses that complement the historic buildings and piers. The Pike Place Market District overlooking the Seattle waterfront, for example, represents a new direction in historic preservation in that it not only protects the architecture of the area, but supports the functions and activities of the Pike Place Market.

It is likely that the pressures for recreational use, cultural enjoyment, and historic preservation of city waterfronts will continue. The types and numbers of people who use urban waterfronts can be expected to increase as waterfronts continue to offer increasingly diverse attractions.

The success of planned events, such as festivals and exhibits, as well as the popularity of many less ambitious, more informal activities, such as fishing, strolling, and picnicking, should be recognized as reflections of urban cultural growth and its demands upon the waterfront resource.

CITIZEN PARTICIPATION

The remarkable appearance within the past decade of active local citizen groups intervening in the public decision-making process concerning the siting of large facilities, changes in land use, and other developments of substantial impact on neighborhoods has also been evident on the waterfront. Because access to the waterfront is perceived to be an important goal to more people than the residents of the waterfront community only, waterfront citizen groups can expect to receive support from a wide base throughout an urban area. Proposals to site oil or liquefied gas marine terminals, build tunnels or bridges, erect high-rise condominiums, build or rebuild waterfront highways, expand airports, site waste treatment facilities, or, in fact, make virtually any conceivable change in waterfront land use evoke opposition from voluntary citizen groups. Such groups, although they do not have authority to force concessions from the responsible public agencies controlling permits or funding like port authorities or urban redevelopment authorities, can nonetheless greatly influence the development or renewal of waterfront land through political suasion or, occasionally, legal action. It is not uncommon for citizen groups to serve as permanent watchdog committees, moving on to new issues as old ones are resolved and accumulating considerable expertise on waterfront matters among their members.

NEEDS FOR FURTHER STUDY

The Cambridge symposium revealed a general paucity of consistent data about urban waterfront land use and development activities throughout the United States, and a review of relevant research supports the impression. While the diversity of activities affecting the use of waterfront lands is interesting, it lacks the guiding influence of the goal-oriented policies essential to any effective approach to contemporary scarcity of resources, among which waterfront lands served by navigable channels must be represented. Accordingly, there are several areas of need for further study in the interests of improving the nation's means for making use of urban waterfronts without compromising environmental quality or the attainment of reasonable local development objectives.

GOVERNMENTAL FRAMEWORK FOR WATERFRONT PLANNING AND DEVELOPMENT

Fragmentation is probably the salient characteristic of whatever governmental framework for waterfront planning and development currently exists. Primary sources of knowledge, authority, and initiative in urban waterfront development are found among state and local agencies, including numerous special-purpose agencies such as port and airport authorities. Several different federal agencies administer programs that affect port development and the use of urban waterfront lands, and these programs are generally uncoordinated. A partial list of federal agencies with responsibility for urban waterfront land development and management would include the Office of Coastal Zone Management, the Economic Development Administration, the Heritage Conservation and Recreation Service, the Environmental Protection Agency, and the Departments of Housing and Urban Development and Transportation as well as the U.S. Army Corps of Engineers. Interagency coordinating groups operating with no clear mandate to integrate their programs and with no general perspective on their actual or potential impact on urban waterfront lands or ports cannot provide an adequate framework for policy making.

There is need for research to review the activities of the host of local, state, and federal agencies with authority over urban waterfront land use and development, to analyze the effects of their programs and their interactions, and to develop recommendations for policy guidance and for coordinating activities under organized leadership.

PORT INVESTMENT POLICY

The history of port development in the United States reveals progressively competitive intercity and interregional efforts to control selected aspects of national and international commerce as changes in transportation technology, population distribution, and international relations interact to create promotional opportunities. Many of the investments in local port facilities depend in some part on federal financial support, but such support is provided primarily in response to political and economic considerations. As a result, extensive, costly, and often duplicative major port facilities may be developed in close proximity, so that excess capacity may be provided at substantial public expense. The proliferation of containership terminals among the major ports of the East Coast illustrates the point.

Research is also needed on the pattern of relationships among the real

estate practices of government agencies and their effects on the development and use of urban waterfront lands. It is apparent from the case studies conducted for this project that traditional real estate management attitudes toward the leasing, operation, and disposition of government-owned lands in major ports may result in wasteful duplication of cargo-handling facilities at the expense of more urgent, diversified needs that critically scarce waterfront acreage might meet. The inflexibility of many government regulations affecting the use and development of waterfront lands ignores the reality of regional differences in market factors, a century's difference in the age of port facilities between the East and West Coasts, and the rapidly evolving technology of shipping and related terminal installations.

HINTERLAND LINKAGES

There is a lack of systematic and reliable information about economic, social, and functional linkages between urban waterfronts and the areas they service. The more obvious rail connections, like those between the coal-mining areas of the Appalachians and the Sparrows Point steel mill near Baltimore, are well understood, as are the airport-access travel routes for inland passengers and for freight passing through waterfront airports such as John F. Kennedy International Airport in New York, Philadelphia International Airport, or Logan Airport in Boston. But as noted earlier, traditional cargo and passenger technologies are changing and so too are the links between ports and inland areas. More needs to be known about these links.

DIVERSE USES OF WATERFRONT LANDS

The growing diversity of uses of urban waterfront lands for commerce, major highways, permanent dwellings, local recreation, and tourist facilities, including museums and aquaria and regional festivals, indicates the presence of complex and powerful demands on the scarce waterfront resource.

Waterfront highways reflect some of the most obvious and controversial results of attempts to meet transportation demands by pre-empting diversified waterfronts for traffic structures and rights-of-way. Frequently such highways have created formidable physical and visual barriers between city dwellers and naturally appealing waterfront sites and views. Heated debate, political controversy, and sometimes litigation have characterized public reaction to such highway barriers in several major cities, including Boston, New York, Baltimore, Chicago, New Orleans,

Beachfront highway as a formidable barrier between a residential area and a recreational waterfront, Chicago, Illinois.

and San Francisco. Research is needed to develop more effective means for evaluating potential barrier effects, as well as other environmental consequences, of urban highways through planning before commitments of scarce waterfront land are made.

The recent cleanup of once polluted harbors achieved through the implementation of federal and state environmental protection laws has made urban waterfronts available and attractive to a multitude of people. Recent experience in Boston, New York, Baltimore, Savannah, San Francisco, and Oakland indicates that, in addition to developing commercial opportunities, accessibility of the waterfront for local

citizens plays an important role in strengthening civic self-image and pride. Research is needed to gauge the magnitude of this effect and to provide data on the characteristics of the current and prospective users of rediscovered urban waterfronts.

A sense of euphoria about recent urban waterfront enhancements is apparent in the current attitude of real estate investors in several major cities, in the interest of government agencies in urban waterfront development schemes, and in the spate of topical literature claiming success for nearly every waterfront venture undertaken. Such symptoms may be misleading, however, when inflation and the high costs of waterfront construction are considered. There is evidence of risk in several stalled projects in New York and other major ports where excess new pier capacity already exists. There are also limits to the potential of the boutique-and-scented-candle-shop formula for commercial success, as is evident in briefly reborn sections of Atlanta, Chicago, and St. Louis. Similar disappointments are surely in store for several urban waterfront areas. It is all the more important, therefore, given the significantly higher improvement costs involved in urban waterfront areas and their unique transportation requirements, that research be undertaken on the basic economics of waterfronts as urban regional resources.

Such research will provide a more reliable basis for decisions about federal and state grant programs involving waterfront development, including related dredging and port facilities. A public works investment policy must recognize both (a) the subtle redistribution of the nation's key port functions in response to technological change and market factors, and (b) the limited ability of environmentally sensitive areas to accommodate new port development and related urbanization.

ASSESSMENT OF RESOURCES

Urban waterfront lands are among the least well catalogued and understood of our national resources. The fragmentation of authority among local, state, and federal agencies to study, plan, and manage the development of urban waterfront lands, the division of jurisdiction over waterways and the adjacent lands, and the complexities of riparian property ownership—especially in tidal waters—combine to frustrate efforts to comprehend the actual composition and nature of the nation's urban waterfront land resource.

Only for a few locations are reliable data available. An example is San Francisco Bay, where the increased environmental awareness of the past 15 years has resulted in accurate cataloguing as well as effective control of waterfront lands. Several major port authorities maintain extensive, if

not always consistent, records of their own holdings, and the U.S. Army Corps of Engineers develops periodic but limited information on individual harbors and ports. As a rule, however, such information is gathered and updated sporadically, and little effort is made to establish a national or regional perspective on the special resource that urban waterfront lands represent. Consequently, vast areas of abandoned land and facilities, both government and privately owned, lie fallow in industrially strategic locations even as new facilities are built in outlying, often environmentally vulnerable, areas requiring entirely new ship channels, highways, and other infrastructure. The result is an especially expensive type of urban industrial sprawl.

A review of the literature on port development in the United States and related planning studies conducted by 20 major cities reveals a continuing preoccupation with the problems posed by obsolescent freight handling and passenger facilities. There is, as we have seen, a trend among cities large and small to reclaim strategic waterfront sites formerly committed to industrial use for more diversified activities planned to attract people seeking recreation and entertainment. The phenomenon is seen in the nation's capital, where long-term trends, as well as recent public policy decisions, have combined to begin the conversion of strategic but marginally developed industrial frontage on the Potomac to diversified public recreational, commercial, and residential uses.

SUMMARY

Most urban waterfront areas in the United States reflect a lack of planning in their adaptations to successive demands for new functions. Traditionally, their development and redevelopment have been characterized by a series of loosely related projects realized in episodes of more or less favorable economic activity by dozens of political jurisdictions and hundreds of entrepreneurs. The political framework for planning and regulating such development activities, including zoning, has been designed to limit, rather than assert, a more comprehensive approach to the scarce resource that urban waterfront lands represent. Improved planning would afford many benefits for coastal cities, including opportunities to integrate scientific information with market phenomena and political forces in guiding the use of their special waterfront resource.

The commissioned papers that follow provide historical background on several aspects of urban waterfront land development and use, as well as information from case studies and experience developed in cities

representing a wide range of waterfront problems and opportunities. The Study Committee offers these, together with its introductory comments, to promote improved understanding and management of urban waterfront land use.

REFERENCE

U.S. Department of Interior (1978) National Urban Recreation Study. Executive Report. Washington, D.C.: U.S. Government Printing Office.

Commissioned Papers

Boston's Waterfront Issues for Today and Tomorrow

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INTRODUCTION

Since its founding in 1636, the City of Boston's fortune has been tied to its port and harbor. Like the sea, the waterfront of Boston lies today as the source of growth and new beginnings for the City of Boston. And, much as the sea has always presented a great challenge to man, the issues that arise along the waterfront of Boston present the City with some of its greatest conflicts.

In early days, ports operated as public highways under a laissez-faire economy. The fortunes of the great families of Boston Yankees were made in the Port of Boston, primarily through their China and West Indian trades. Today, ports operate more as public utilities: regulated and demanding heavy public capital investment.

This change in the way that ports operate underlies the changes that have occurred within the harbor and along the waterfront of Boston. The waterfront was formerly Boston's front door—its main access route. As changes in the technology of ports emerged, the harbor and waterfront became drab, private, proprietary, dark, dirty, noisy, and closed to the

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public. In the past 25 years, Boston's redevelopment efforts sought to restore openness to the waterfront and to reclaim the waterfront for diverse use. The underlying theme of this paper is the life cycle of the waterfront area. The discussion is organized in five sections:

- Regional Benefits Versus Local Costs (and Benefits).
- Development for Whom?
- Recreation.
- Access to the Waterfront.
- Management of the Harbor.

REGIONAL BENEFITS VERSUS LOCAL COSTS (AND BENEFITS)

In early days when conflicts arose about the sitings of waterfront facilities, an obvious and relatively easy answer was to create new land. The extent to which this solution was drawn upon was dramatic. The entire area of South Boston, East Boston, Charlestown, and Downtown was created to accommodate the needs and demands of expanding commerce. Today, with serious cost considerations and environmental concerns, filling land to meet new needs is usually only considered after all other options are ruled out.

The resources of the harbor have been used throughout history to connect Boston with its hinterland and, although there were costs involved in siting facilities on the waterfront that were not distributed among the beneficiaries, that imbalance has reached greater proportions today. Land on the waterfront has become a relatively scarce resource, and the conflicting demands between the localities, the facilities that might be sited in those localities, and the benefits derived from such facilities have been identified more clearly. We will explore three particular siting questions and the elements of the controversies around their sitings: (1) the reuse of the South Boston Naval Annex and the location of port facilities; (2) siting a stadium in South Boston; and (3) the siting and expansion of Logan Airport. In addition, we will consider the rehabilitation of the Boston Fish Pier.

SOUTH BOSTON

The waterfront of South Boston offers a case study of redevelopment of an industrial port area. "Commonwealth Flats," an area of nearly 300 acres in South Boston, was filled in by the Commonwealth of Massachusetts in the late 19th century to provide relief from the

congestion of the Downtown Waterfront. Many different actors played a part in its development: New York, New Haven and Hartford Railroad located its Boston Terminal in this area; the Commonwealth of Massachusetts provided passenger and fishing facilities; and the U.S. Navy added a shipbuilding and repair annex to the Charlestown Navy Yard, while private firms developed warehousing. In the last 15 years, the rail yards have been abandoned, the rail piers have been turned into parking lots, the Navy Yard has been decommissioned, the passenger cruise traffic has slowed to a shadow of its former self, the fishing industry has been depressed, and the wool warehouses have been vacated.

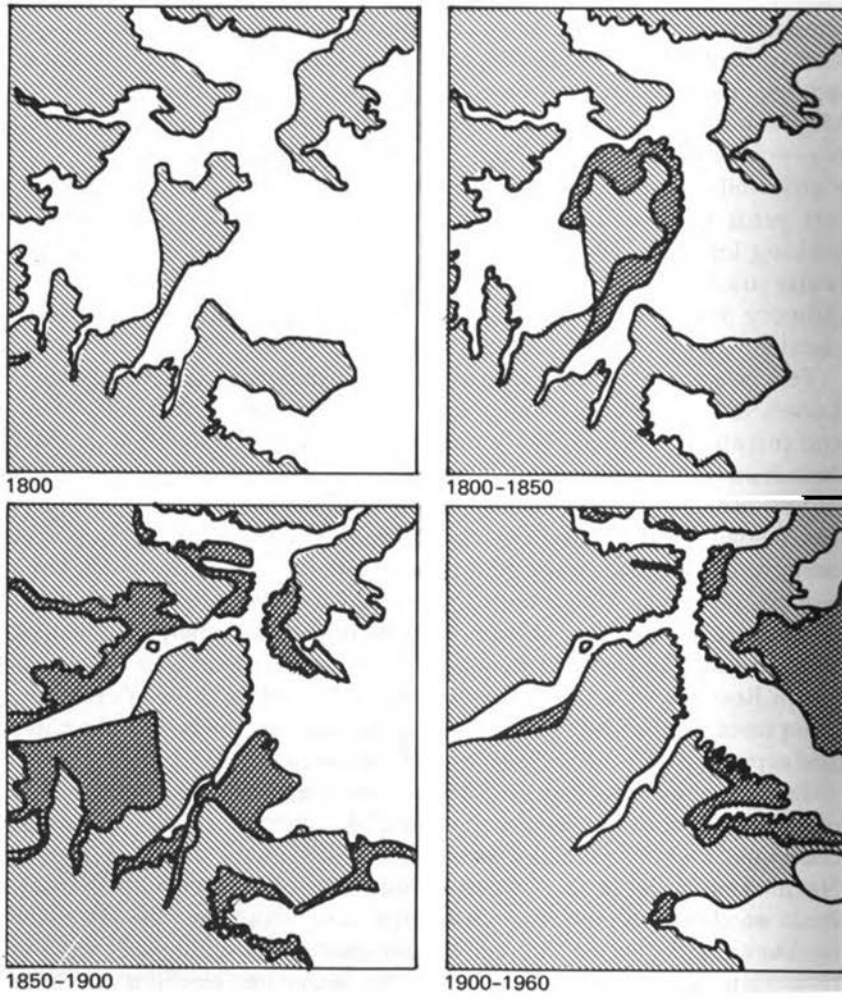
Five years ago this was among the most depressed areas of Boston. Today, it still appears abandoned, but an array of plans from the public and private sectors make it a promising area for development in the next decade.

This area, separated from Boston's downtown business and commercial center by the Fort Point Channel, is attractive for development because of its good waterfront views, and its concentration of large parcels of land. The largest roadblock to development has been inadequate car and truck access. Because of the movement of industries away from the City of Boston during the postwar years, the goals for South Boston's waterfront include: providing jobs for Boston's resident labor force; maximizing and enhancing the property tax base of the City; and supplying sites for uses that are important to the City.

Two developments that meet these criteria are proposed for this area of South Boston, but they are stirring up a storm in the residential community. One is a major container facility at the 100-acre, former Naval Annex; the other is a sports stadium on the Fort Point Channel. Both of these proposals focus on the same problem—the siting of facilities on the water that have significant negative impacts for the immediate neighborhood, but benefit the larger metropolitan area that they serve.

A Major Container Facility

The arguments of those opposing the use of the South Boston Naval Annex for seaport development present a particular irony, since it was precisely such activities that helped secure Boston's fortunes and future. However, the industrial era removed the Port from sight; it was closed off into self-contained, private, remote areas by filling the harbor for the express purpose of separating the Port from other areas of the City. The entrance to the harbor in South Boston is removed from any contact



SOURCE: Metropolitan Area Planning Council (1976).

FIGURE 1 Land Creation in Boston Harbor, 1800-1960.

with the City's residents, and the major container terminal is remotely located under a bridge and on the mouth of the Mystic River.

Changing technology in the Port has also contributed to its isolation. No longer are hundreds of men needed to load and unload ships. Containerization, in improving the efficiency in moving cargo, has

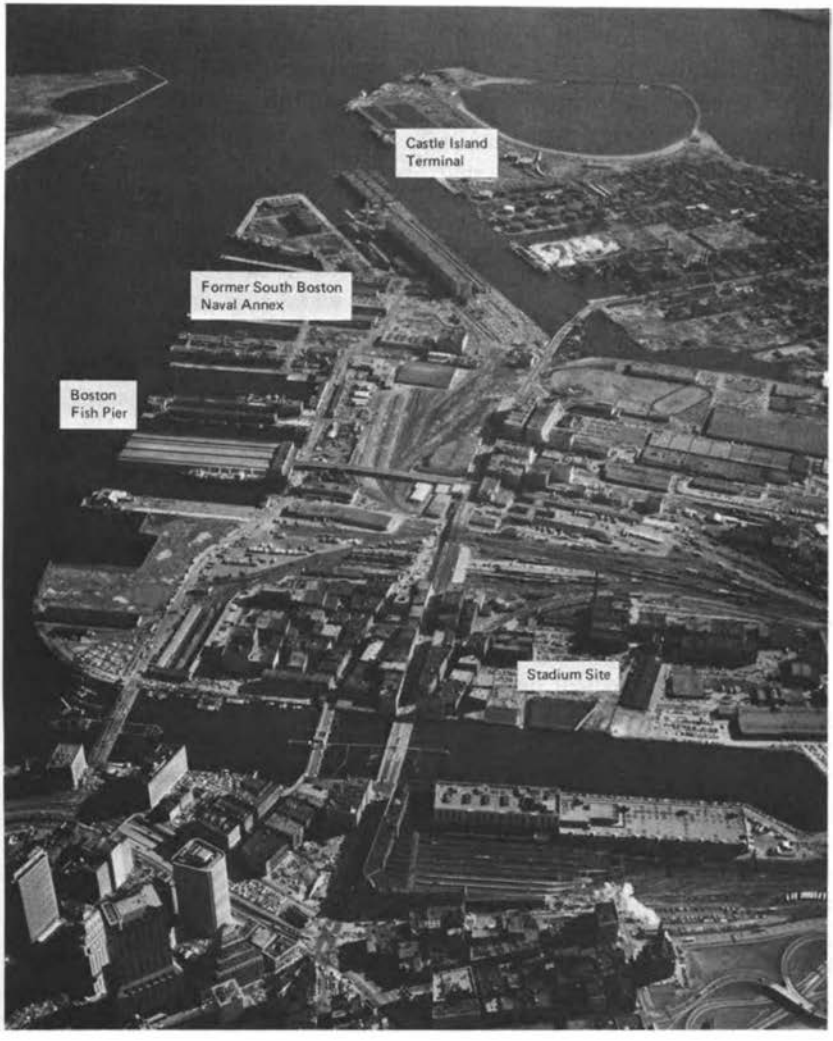


FIGURE 2 South Boston waterfront, looking east from downtown.

diminished the number of jobs involved in the maritime trade directly, and in so doing lost a major constituency to support its development needs. Even the businesses of Boston, those that grew out of the fortunes amassed through the China and West Indian trades, now only maintain their connection with the Port of Boston through nostalgia. While the boardrooms of Boston's major skyscrapers are lined with pictures of the

old clipper ships, attention has now shifted to the airport, only 2 miles from downtown Boston.

The seaport community likes to remind the City that it built the new City Hall with its back to the Port, and this fortress-like back side represents to the seaport community the resistance they feel meets their every attempt to expand the maritime facilities in the Port of Boston.

The South Boston Naval Annex has for some years been recognized by most observers, including the authors of the state's Coastal Zone Management Plan, as the best remaining site in Boston Harbor for port development. It is an industrial area, has waterfront depths of 35 to 40 feet, 100 acres of supporting backland, and is sorely needed for port expansion. The area is instead being used for a variety of nonmaritime uses. The political quagmire into which this property has sunk is an excellent example of the worst case of land use decision making. The City finds itself unable to make long-term commitments to users who would develop the site and benefit from its waterfront location because of continuing negotiations with the Port Authority who wish to build the seaport. Port expansion, on the other hand, has been stalled for 2 years waiting for the results of discussions with the City. Neither political entity is satisfied and the site remains underutilized. Since the property lies under a flight path to the airport, it can be assumed that industrial reuse of some kind will occur, but whether or not it will be maritime-related is still an open question. The inability of the City and the Port Authority to reach agreement on the use of this site has had negative impacts beyond the boundaries of the site. Joint plans to develop adequate truck access to this portion of South Boston have been shelved pending resolution of the disagreement, and efforts by the Redevelopment Authority to guide the comprehensive reuse of the waterfront area beyond the Naval Annex have been stymied.

The neighborhood and city arguments against new port facilities are reasonable and simple—not enough jobs and no help on taxes. The regional economic benefits of a seaport facility that consumes a large land area and produces a low jobs-to-acreage ratio do not lend themselves easily to a simple explanation. Yet, as technological developments have always shown, those who choose not to embrace them may become the modern-day Luddites. Trade and commerce within a large metropolitan, even multistate, region is an imperative—the life blood of its economy. So, the public sector today is left the onerous task of balancing arguments that transcend jurisidiction and outlast political lifetimes.

And yet, the neighborhood arguments are also compelling. It is they

who endure any noise, congestion and pollution generated by new facilities. They are left almost no other alternative than to raise obstacles, however temporary, asserting that they are the ones who "pay" for the facility by absorbing its unintended consequences. It is likely, however, that this shouldering at the local level of major regional transportation facilities will carry increasing weight in siting decisions. (Redistribution mechanisms will have to be found so that the neighborhood or the municipality in which major facilities are sited will receive some direct, as well as indirect, benefits for housing such facilities.)

A Sports Stadium

A major sports stadium is proposed for a 30-acre parcel on the Channel. It would provide a large arena and would have to accommodate a parking garage for over 2,000 cars. The complex would be constructed and managed by public authority which would issue tax exempt revenue bonds to finance the construction, estimated at approximately $50 million. The bonds would be secured by the leases of the principal users and guaranteed by the Commonwealth. Public benefits that would derive from the development are cited as follows: new sales, hotel, and meal taxes. It is this public purpose that is being defined as the basis for issuing tax-exempt bonds.

This proposal for a stadium being located in South Boston is more difficult to support than that for a maritime facility. There is no requirement that a stadium be located on the waterfront, and the residents of South Boston are convinced that their residential streets would be even more impacted by a stadium than a container facility. Locating a facility that will have major peaking congestion problems on a peninsula which, in the best of circumstances, has to have limited access and egress is enough to stir outrage in a community that prides itself on its support for not only its local sports leagues, but for all of Boston's home teams.

Boston's original sports stadium, the Boston Garden, and Boston's original port terminals were financed by local entrepreneurs and later, in the instance of the port facilities, by the railroads; reliance for financing is now in the public sector. This in turn means that the discussions about what should ultimately be done about the two proposals for waterfront development in South Boston are open to a wide range of participants, which will undoubtedly delay, and could even prevent, the building of a facility. On the other hand, it is also a way to ensure that problems will be raised and addressed even if they are not ultimately solved.

LOGAN AIRPORT

For the past 30 years, Logan's air traffic growth has engendered a continuing dispute between the airport and its neighbors which shows no signs of lessening within the foreseeable future. The intensity and duration of this unending contest overshadows any other in the history of waterfront development in metropolitan Boston. In part because of its size and the particular impact of its technology, but mostly because of its proximity to the center rather than the fringe of a metropolitan area, Logan Airport exemplifies the failure of local, state, and federal agencies to manage the growth of a new transportation technology in a way that does not threaten the viability of the urban community.

Urban waterfront airports are by no means uncommon in the United States; Kennedy, LaGuardia, San Francisco, Oakland, San Diego, Washington, and National are all examples. Their siting was a consequence of two factors: the economical creation of level land by landfill in shallow estuarine waters, and the prevailing political rule of thumb that such areas were wastelands suitable only for the disposal of garbage and unsuitable for development of deepwater marine terminals. In these respects the siting of Logan Airport was no different from the others in its class. But other factors were significant as well, and deserve further mention.

Logan Airport was born officially in 1923 as Boston's airport on a 200-acre parcel of land adjacent to Jeffries Point in East Boston. The site had been created from dredging spoils deposited there by the Army Corps of Engineers prior to World War I while dredging the main ship channel to Boston's inner harbor. Appropriately, the site was leased to the Corps of Engineers, which constructed facilities for use by the aircraft division of the National Guard. Later, in 1928, the City of Boston assumed the duties of lessee and added an additional 400 acres during its decade of management. By the beginning of World War II, the Commonwealth once more resumed control of the airport, placing it under the jurisdiction of the Department of Public Works, which planned to develop Logan into a major airport.

Delayed by the war, this plan was quickly consummated at its end with the filling of 2,000 acres of tidal flats with spoils dredged from surrounding waters. Two harbor islands, Pea Island and Governor's Island, were leveled. By 1948, nearly all the present land area of Logan had been created. In the ensuing 10 years, the present runway pattern was established. Although the period from 1958 to the present was one of considerable construction of terminal and airfield improvements, there were no sizeable additions to the airport area (although there were

FIGURE 3 Logan Airport circa 1930, looking northeast (1979 boundaries indicated by dotted line).

several very controversial minor additions, discussed below). In retrospect, the irrevocable decision about Logan was made well in advance of the appearance of significant controversy over its operations.

There are several factors that might account for the ease with which Logan was expanded in the late 1940's. The pent-up demand for civilian public works, created by the lean war years, found a model project in Logan. As noted previously, other major cities were engaged in shallow water landfill projects to create airports; it was clearly the trend. It was also the heyday of the public works engineer. The siting of public works was decided on technical grounds and human communities had to rearrange themselves according to the technical imperatives. Even so, there appears to have been no conscious pause on the part of the Department of Public Works to determine whether a site other than East Boston would be more suitable for a metropolitan airport.

There was indeed some resistance to the public works expansion of Logan in the later 1940's. It foreshadowed the escalating conflicts of the 1960's and 1970's. But most large-scale waterfront projects, such as the construction of the Mystic River Bridge, proceeded smoothly as thousands of inhabitants meekly yielded their houses in the interests of "progress."

Noise from commercial jet aircraft is an endemic problem for many urban airports. In Boston, aggregate noise exposure has increased

rapidly in the last 2 decades because of the replacement of propeller-driven aircraft by jets and the growth in number of flights at Logan. Unlike many other airports, residential population within the high noise zone has decreased. Land-use trends in neighboring communities have shown some tendency to accommodate to airport growth, but not vice versa.

A major factor in the persistence of the airport/community controversy is the reluctance of community groups to relinquish land in high noise zones, which are no longer suitable for human habitation. As the airport resisters view it, the virtual expropriation of habitable land by noise intrusion is reversible through future improvements in aircraft technology and restrictions on airport operations. Their objective is to shrink the tolerable noise contour to within the airport boundaries, thereby preserving for indefinite future residential use the land area that was encroached upon in the expansion of the late 1940's.

An auxiliary issue of great symbolic importance was the disposition of park and recreation lands in East Boston during the period of state assumption of responsibility for the physical expansion of the airport land areas. While the amount of such land was small (compared with the airport), East Boston was singularly short on park space compared with other sections of Boston.

The reshuffling of public park and recreation space in East Boston to accommodate airport growth proceeded for 20 years. An early decision (in the late 1940's) to sacrifice Amerena Park and Wood Island Park to airport needs in return for a sports stadium and bathing beach less suitably situated to residential areas did not arouse great public opposition at the time. It was consistent with the then-current practice of using park land for highway construction, especially to avoid encroaching on homes. By the time Wood Island Park was leveled in 1968, after a lengthy legal and political battle to prevent its incorporation into Runway 15-33, public opinion had switched to regard such land-use conversions as undesirable. Today, a decade later, the taking of urban public park land for airport expansion is unthinkable.

Wood Island Park was more than a nondescript, undeveloped land parcel. At the time that he designed the extensive park system of Boston, Frederick Law Olmstead prepared a plan for developing Wood Island Park, probably one of the first waterfront parks in the nation. The original plan was never brought to fruition, although some of Olmstead's ideas were incorporated into the city park at Wood Island.

In their desperate but losing battle to save Wood Island Park from the bulldozer's scraper, community groups were trying prematurely to stem the local and national tide of concrete and asphalt that oozed through

FIGURE 4 Logan Airport, 1978, present boundaries, looking southwest toward downtown.

parklands and residential neighborhoods in the 1950's and 1960's. A decade later, ambitious inner-city highway programs were scrubbed as threatened neighborhood groups coalesced to blockade the highway buffs from invading city streets and recreation areas.

In Downtown Boston an elevated highway, the Central Artery, intrusively slices through the center of a redeveloping area which extends to the waterfront. Constructed during the feverish 1950's, the Central Artery is considered a major inhibition to the future development of the central business district and is slated for depression into an underground throughway—an exceedingly costly correction of an old mistake.

Will Logan Airport be considered the "Central Artery" of the 21st century?

FISH PIER

Fishing is Massachusetts' oldest industry. As early as 1636, the cod became the symbol of Massachusetts, and by 1700 codfishing became the staple of the Port of Boston's export commerce to the West Indies and Europe. Boston was primarily a fish marketing port and remains so today. Most fish was handled in Boston and distributed throughout New England and the East Coast. In 1912 the Fish Pier was built to help relieve the congestion at other wharves in the harbor. It was the largest and most modern plant of its kind in the world, with some of the most sophisticated equipment for fish handling, including its own ice plant with a tiny railroad on the roof capable of distributing ice to each dealer, a cold storage facility, a central heating system, and a telegraph communication system.

In 1920 the Pier processed more than 750,000 pounds of fish a day and distributed more than 150 million pounds a year. In 1978 only about 21 million pounds were landed by the Boston fleet, while in 1936, 339 million pounds were landed.

Worldwide fishing characteristics and the American trade deficit have resulted in physical and operational changes at the Fish Pier.

Imported Fish and the 200-Mile Limit

The first sign of imported fish as a major entry into the American market came after World War II. U.S. government contracts for fish ended with the war. Other nations became interested in reconstructing their fishing fleets and offered large subsidies, substantial portions of which came from U.S. Marshall Plan funds.

The popularity of Georges Bank, off the New England coast, as a major source of groundfish became an issue in the 1960's when foreign fleets outnumbered domestics. The modern foreign fleets could stay out almost 3 months with a crew of 60, and process almost 250 tons of fish a day as opposed to the small 10-man crews of the New England fleets which could not equal the output.

This impact was devastating on the domestic fleet and the domestic fishermen. Unable to compete on the scale of the foreign vessels, the New England industry suffered. With the decline in the fleet came a subsequent decline in the number of wholesalers and processors.

In 1973 the "200-Mile Limit Bill" was introduced in Congress; it became law 3 years later. In essence, the law states that the jursidiction of the United States is formally extended over its fishing resources to 200 miles. Foreign trawlers may fish within this area, but only after applying

FIGURE 5 Boston Fish Pier.

for a permit. The immediate effect of the law was that the amount of fish caught by foreign fishermen plummeted sharply, while the opposite was true for domestic fishermen. While the full impact of this law is not expected to be felt for about 5 years, the overall success to date has been encouraging. Foreign fishing has declined in these waters and depleted stocks have now begun to rebuild. But for the 200-mile limit to be of importance to the Boston fishing fleet, the rehabilitation of the Boston Fish Pier and modern facilities for the dealers are mandatory.

A $6.5 million grant from the Economic Development Agency is earmarked for the rehabilitation of the Fish Pier. Not only are structural modifications and space utilizations taking place, but various methods of management and operations have also been analyzed. Among the

improvements that will be made are: new heating and ice-making systems, reorganized traffic patterns, and innovative delivery and disposal methods.

There are problems, however, associated with renovation of the facilities. Most of the present tenants at the Fish Pier are immersed in their long-standing ways of loading and processing fish. The group is a highly competitive conglomeration of small businesses, but for development to occur they must work together and face an issue that is particularly threatening to them—the introduction of new technology to accomplish the unloading and distribution of the fish. So that while the redevelopment and renovation of the Fish Pier does not appear to pose problems for its neighbors in ways that are outlined in the other cases described, the internal disruption that is created among those most affected by this is an equally important aspect of change that must be documented. Only if the facilities accommodate new technology and "come into the 20th century" will there be a long-range future for the fishing industry in Boston Harbor.

DEVELOPMENT FOR WHOM?

An important issue in the development of Boston's waterfront is the compatibility and the allocation of waterfront space among residential, commercial and industrial uses. Each of the neighborhoods discussed here—Downtown Waterfront/North End; Charlestown; East Boston; and South Boston—has undergone cycles of change that are reflective of the history through which they have passed, and represent a range of critical questions that define how waterfront land is used. At the same time, we will consider how to better arrange transitions in land use; how transition is measured; and to what extent future needs are anticipated so as to be incorporated in a development program that is likely to span a decade.

Public action during the past decade has made dramatic changes along Boston's Downtown Waterfront. Initially spurred by funds from the federal urban renewal program, waterfront redevelopment continues to occur at a rapid pace financed by both private and public dollars. Revitalization is occurring in two quite different types of waterfront property in Boston.

The first type of redevelopment is the restoration and revitalization of the preindustrial downtown waterfront with its massive brick and granite wharf buildings. The scale and construction of this area lends itself to rehabilitation and restoration, capitalizing not only on the waterfront location but also on the historic tradition of the old port and its

architecture. The proximity to downtown makes development of these properties for residential and commercial use appropriate.

The second type of redevelopment is in the former industrial port areas, such as the abandoned rail yards and piers of South Boston, East Boston, and Charlestown. These areas offer considerable acreage but without the historical buildings and ambience of the older central waterfront. They divide themselves with opportunities for industrial/port reuse in South Boston or combined new/old for development of commercial/residential/industrial areas in East Boston and Charlestown.

In the past 20 years there has been a significant loss of population from Boston's waterfront and Boston neighborhoods, including those along the waterfront. Historically, the population of the waterfront neighborhoods was directly related to waterfront-located jobs such as cargo handling and shipbuilding; however, technology changed that, and as the shipyards closed or diminished their numbers of employees and the old port facilities were abandoned, the connection between the waterfront and the adjacent neighborhoods became more tenuous. In recent years, as the opportunity for redevelopment of the waterfronts became a real possibility, the neighborhoods' interest in the waterfront reawakened.

DOWNTOWN WATERFRONT

The opportunities presented by the revitalization of downtown waterfronts became obvious in the early days of urban renewal. These areas presented an immediate opportunity for investment that would not require massive movement of people, and they were close enough to downtown that renewal and resurgence could only enhance the focus that urban renewal had already directed to downtown. The waterfront development program, which began in Boston in the early 1960's and is still underway, raises two important issues for the future uses of waterfront lands.

What Happens When You Create a New Neighborhood?

After the completion of two 40-story towers on Boston's waterfront, a major controversy arose around the remainder of the urban renewal plan not yet under construction. The residents who had moved into the new structures, along with a few waterfront pioneers who inhabited one or two of the unrehabilitated waterfront buildings, created a new constituency for what they saw as their neighborhood.

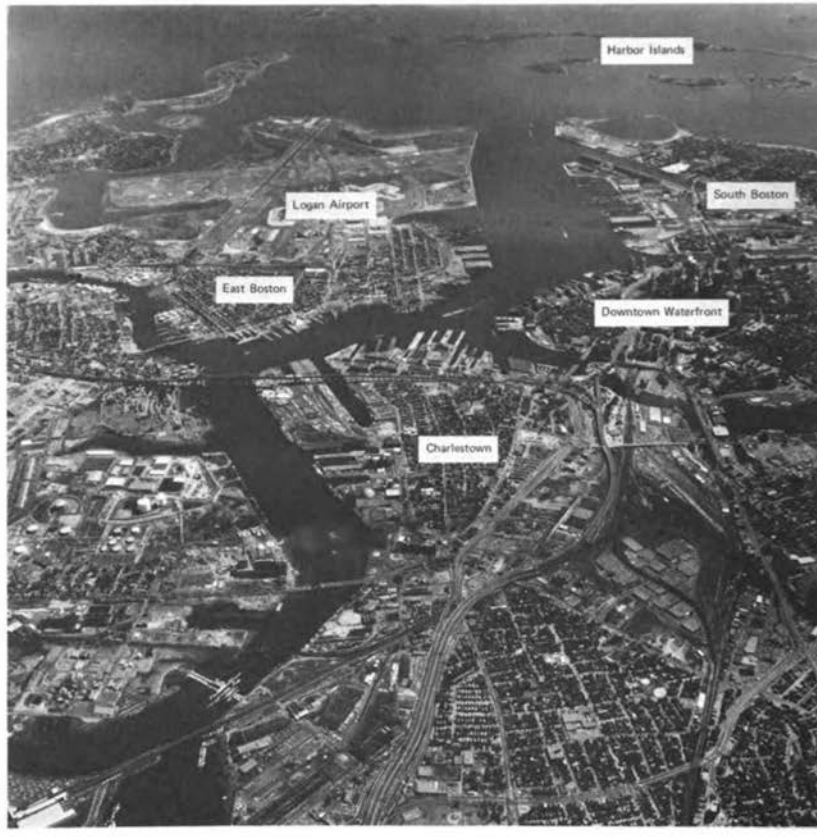


FIGURE 6 Boston Harbor, 1978, looking east.

How Should a Major New Development Relate to Its Neighboring Areas?

In this case, the waterfront development must be considered in relation to both the Downtown area, to which it was oriented originally, and the North End, which saw itself as being the most impacted.

The waterfront project includes 1,800 housing units in new or renovated buildings, an aquarium, a marina, new restaurants, stores and offices, and a pier used by harbor tour boats. The plan, drawn up with extensive business interest participation but without significant involvement of neighboring residential areas, was oriented to the water and to Downtown Boston's government center and financial district. The major

waterfront street has been relocated and ramps to the Central Artery removed to provide pedestrian access from downtown and from the enormously successful adjacent Quincy Market area. The focal point of activity is the popular waterfront park. Its aim was to restore the vitality of this area lost when the Port moved to outlying areas over 100 years ago.

Waterfront development in Boston is slated to occur in an area adjacent to one of its most colorful, dense, ethnic neighborhoods—the North End. The Italians who inhabit the North End are fiercely turf-conscious, and have maintained a protected neighborhood enclave which has withstood the kinds of pressures that forced many of Boston's other neighborhoods into rapid change in the 1950's and early 1960's. Surrounded by water and cut off from the rest of the city by the Central Artery, the North End was a self-contained, secure, colorful neighborhood which viewed the redevelopment of the waterfront skeptically. At best, it could only be a mixed blessing. New waterfront development could divert shoppers from the bustling Haymarket area whose meat and fruit markets served an entire region. It would open up the area to newcomers, a force fiercely resisted by the present residents. And, as this development proceeded along the lines of the very earliest urban renewal plans, there would be little opportunity for the North End to say very much about what was happening.

Residents of the North End are predominantly working and middle class. A large proportion are now elderly. The North End saw the opportunity available in a developing waterfront to accommodate their needs for elderly housing, relief from the congestion that made moving through their double-parked streets impossible, for open space that was oriented to the needs of the elderly and the remaining young families in the area, and the opportunity for North End entrepreneurs to have a role in the financial rewards that such development would bring. However, in the original plan for waterfront redevelopment, luxury housing predominated in the form of high-rise towers, reclaimed preindustrial granite wharf buildings, hotels to serve tourists, an aquarium, museums, and a large park. These magnets would bring the tourist and the suburbanite into the City, but the new waterfront would become the exclusive domain of the well-to-do. The timing of waterfront development in Boston was delayed by the usual problems encountered in major renewal projects—approvals of financing, demolition, utilities, etc.

Passage of time in this instance, however, presented a real opportunity that was seized by the earliest waterfront residents and the North End populace. A court suit was brought by the earliest waterfront residents and developers to restrain the Boston Redevelopment Authority from

proceeding with the original plan. In the course of resolving the outcome of the court suit, the North End became more aware of what was happening in its backyard and demanded a role in the resolution of downtown waterfront redevelopment. As a result, the original Downtown Waterfront plan was redone with extensive participation, this time by both the new waterfront residents and the North End.

As in most long-fought and hard-won battles, the results stand to benefit a far broader range of interests than was first envisioned. The waterfront of Boston now comprises two major elderly housing developments, and the mixed-income housing use of an imposing granite mercantile building has extended the diversity of the population on the waterfront well beyond expensive high-rise Harbor Towers and Lewis Wharf condominiums. The waterfront park has a major orientation to the North End, drawing its young children and elderly folk, as well as a face to the water which is the culmination of Boston's "walk to the sea." This battle over the future of Boston's waterfront headlined a message that was not lost on the other waterfront communities in Boston.

Two other major waterfront communities, Charlestown to the north and East Boston across the harbor, have learned from the lessons of the Downtown Waterfront. The residents of these neighborhoods have played a major role in the planning for reuse of old waterfront properties in their respective neighborhoods. In each of these instances some major themes prevail: (1) population loss; (2) population reorientation from waterfront jobs; (3) long-term future needs (changes) versus extension of the present; (4) investment; (5) park magnets. Major parks are being located as magnets for other waterfront development. The ownership and maintenance of these parks are an issue. A city can only support a limited number of waterfront parks because of their heavy requirement for maintenance funds. However, neighborhoods are demanding that open space be provided to them on their waterfronts, and neighborhood residents themselves are laying strong claims to the history that their waterfront areas represent for them.

CHARLESTOWN WATERFRONT

The Navy Yard in Charlestown, decommissioned as a shipbuilding and repair facility in 1974, has seen a combination of rehabilitation and new development. Commissioned in 1797, the Navy Yard grew through a series of landfill projects during the 19th century to 130 acres on the mud flats of the Charlestown waterfront. While the South Boston Yard had been vacant for some years at the time of its decommissioning, the

closing of the Charlestown Yard in 1974 meant the loss of some 5,000 skilled jobs.

From the start the City's strategy was to take advantage of the site's waterfront location in planning for its reuse. The resulting redevelopment includes the newly established 23-acre Boston National Historic Park, home of the U.S.S. Constitution, and a 16-acre park now under construction, which will provide access to the harbor for Charlestown residents long cut off from their waterfront by the Navy Yard. The remainder of the site is being developed for mixed residential/commercial activity which, when completed, will include 1,200 new housing units, a 700–1,000 room hotel, and commercial, office, loft, and light industrial space. Where possible, these uses will be incorporated in the adaptive reuse of the Navy Yard's historic buildings. In other areas the focus of development will be new construction. The project represents a total public sector investment of $17 million. It is estimated that when completed the redevelopment of the Charlestown waterfront will create 1,300 permanent jobs, generate $3 million in tax revenue annually, and substantially improve the quality of life for both new and old residents of Charlestown.

RECREATION

WATERFRONT PARKS

The star of Boston's waterfront development is its 4.5-acre waterfront park. While the park was always considered part of the waterfront plan, the size, use and orientation of the park became the subject of bitter controversy in the development of final plans for the waterfront (as discussed previously). While the City was eager to open up the waterfront to extensive use, the costs of building and maintaining parks were becoming an increasing problem not only here, but in all cities.

Similarly in Charlestown, the park was to be the focus of the redevelopment of the old Naval Shipyard. With the U.S.S. Constitution as its star attraction, the draw of the park also provides the base on which retail and commercial development depend for economic viability. Although in both instances the development funds for the park have come from the federal government, the park in Charlestown will also be maintained and operated by the National Park Service, that is, precluding any problem that might occur within the City. In East Boston, the 35 acres comprising former maritime facilities at Piers 1–5 remain relatively underutilized. The community in East Boston up until very recently has seen this location as replacing the parks at Wood

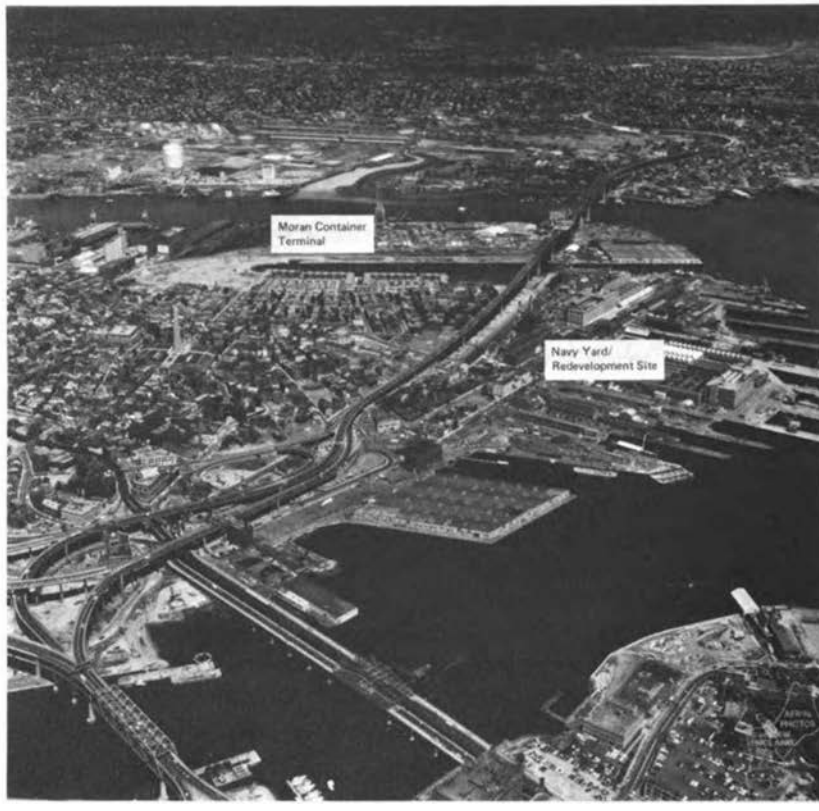


FIGURE 7 Charlestown waterfront, looking north.

Island and Amarena Field lost to airport expansion. While those original parks comprised over 60 acres, the residents of East Boston have been "willing to settle" for the piers as compensation in kind. However, the piers have remained unused for this purpose in the 3 years since it was publicly defined as Port Authority policy to divest them for some community-related purpose of which a park was expected to be at least a part. In the meantime it has become quite clear that the City of Boston is reluctant to create still another large waterfront park for all the reasons stated above. However, what is far more likely is that a portion of whatever development is undertaken at this location will include provisions for not only a park but more public access to the water's edge.

PUBLIC ACCESS

Public access in general has become more in demand as waterfront areas have been redeveloped. In all of the neighborhoods in Boston, local residents were cut off from the water either by military facilities, such as in Charlestown, or by commercial and industrial uses, such as in East Boston, Downtown, and South Boston. The proprietary holdings did not allow for any public entrance. The urban renewal plans for Downtown Boston originally hoped to achieve a public access perimeter along all of the renewed pier and wharf areas. Little by little their hopes have been reduced to selected areas open to the public based primarily on the willingness of individual owners to allow nonresidents around their properties. The reasons most frequently cited for exclusion are security and liability. The new residents moving into the high-income housing located directly on the water are not inclined to allow the general public into their front yard. They already view many of the attractions meant to bring people to the waterfront as being incompatible with their new residential location.

THE HARBOR ISLANDS

The more then 30 islands in the harbor total an approximate 1,200 acres and they lie within a 25-mile radius of a population in excess of 3,000,000. With the passage of the Boston Harbor Island Bill in 1970, all of the islands are now under public ownership. A number of the islands have been reopened to the public with many of their attractions available to the general public for the first time in many years. Last summer 150,000 people visited the islands, and while reasonable cost transportation is now available to the islands, there is no well-identified focus from which this transportation can be offered on a long-term basis. In the plans for the waterfront, a terminal for ferry service to the islands, as well as for other ferry activities for Boston Harbor, was located at either Rowe's or Long's or Foster's Wharf. However, even 10 years after the Harbor Island Bill was passed, that issue has not yet been settled. Neither the City nor the state has been successful in putting together the necessary elements of funding and support facilities that would make the project feasible and acceptable to all concerned. As a result, the resources that would be necessary to attract even larger numbers to the islands have not yet been available and the cycle of lack of resources and lack of demand remains unbroken.

Cost/Resources

There is no clear, large, local voting constituency for the Harbor Islands. Responsibility for improving and maintaining them is divided among three different governmental agencies. The amount of money available is neither sufficient nor well coordinated. However, since the demand for water-related recreation is outstripping the growth in population, the funding may change in future years.

Harbor Pollution

Boston's inner harbor suffers from considerable pollution. The treatment plants located on islands in the harbor have been major contributors to the pollution, but the more important problem is that of overflow from the combined storm sewers throughout the City which dump raw sewage into the harbor when they overflow. This not only presents a health hazard but is unsightly. The issues of pollution and recreation have been inextricably tied in Boston Harbor for the past 2 centuries. Pollution and recreation present an interlocking set of problems and opportunities with pollution severely constraining the rehabilitation potential of recreational resources in the harbor. The problem is enhanced by the confusion of jurisdictional responsibilities and the maze of local, state, and federal agencies that have a role in financing, regulating, and managing pollution abatement. This labyrinth of bureaucracy excludes any effective citizen effort at marshalling the resources to accomplish the job at hand. As the new waterfront areas are developed, however, a far more vociferous and self-interested constituency will be growing and is expected to focus on the amenities for which they are paying dearly.

ACCESS TO THE WATERFRONT

GROUND NETWORK

Changes in transportation technology have had a major impact in defining the use and obsolescence of facilities along the waterfront. This cycle is clear throughout the 300-year history of the waterfront, and today some of the ground transportation/roadway network issues are among the most important in determining the future use and profile of the waterfront. Three particular projects will be discussed in this section: (1) the Central Artery of Boston; (2) the controversy surrounding the location of an improved access road in the industrial area in South

Boston; and (3) the problems of cross-harbor traffic and their relationship to development in East Boston.

The areas of significant waterfront development that have been discussed in the earlier sections—Charlestown, Downtown Boston, South Boston, and East Boston—have all suffered in recent history from the difficulties imposed by the ground transportation system. A major element in defining the redevelopment potential for these areas has been the requirement to provide new means of access and circulation to and through these areas. In areas like the waterfront, the question of depressing Boston's Central Artery has become a major issue. Its outcome is still uncertain. In South Boston, the provision of a new circulation pattern is essential to the development of the entire northern portion of that peninsula where the significant maritime and industrial development is planned. The circulation system to and within the South Boston area is severely constrained by old bridges and limited capacity, as well as a street system that was not planned to the level of automobile and truck traffic that would emerge from intensive new development. However, in South Boston a program to define the appropriate alignments for a "Seaport Access Road" has been stymied by the debate over the location of the stadium. At the present time, local residents have "held this project hostage" until they get a clearer signal that the stadium will not be located in South Boston. The outcome of this tactic is that redevelopment of the industrial area is being slowed since a new circulation system is a critical first step.

DEVELOPMENT OF ROAD NETWORK

Boston is fortunate. Its early development as a port city was based on its unique topography of peninsula and deep water. Its closeness to England got it off on the right foot and established its early primacy in North America. This primacy was held long after economic conditions changed and worked against Boston's retention of its position as a dominant American port. The factors that have determined the rise and decline of the Port have been its physical and locational characteristics and the development of local rail and road transportation facilities.

After World War I, Boston's Port declined to the point where it was no longer of major national or international importance, although it did continue to play a role in serving the New England region. During the same period, shifts were coming about in ground access to and from the port. Trucking emerged as a more fine-grained mode for the transport of goods. As the road network was improved, the trucking industry was encouraged in its competition with rail lines.

FIGURE 8 Access routes.

ACCESS AND PORT USE AND DEVELOPMENT

For the most part, the configuration of maritime and industrial development along the waterfront in Boston has been determined and designed with rail as the predominant mode of transport to and from the Port. With the decline of rail, the roadway system in and around the port areas proved to be totally inadequate to the demands of the automobile and truck. Equally important, new loading and unloading technologies required by the trucking industry in the form of containerization demanded a different type of facility entirely.

Maritime uses as well as diverse new developments in the Port of Boston are constrained today by landside transportation and are dependent upon improvements to land transportation for their growth or reuse.

EAST BOSTON

East Boston was and, despite heavy filling, remains a peninsula connected by land to the mainland only to the north. Its connections both to Downtown and to the regional expressway network are via tunnels under Boston Harbor. Several small bridges connect the peninsula to the west and to local streets. These connections to the outside world are a major constraint on the redevelopment of port facilities, the harbor in East Boston, and to all other future development options as well. Few of East Boston's local streets connect directly to the network of express routes out of Boston and almost no port-serving roads connect to these highways except via local residential streets.

East Boston Harbor is divided into several sections. Piers 1–5 would have to be rebuilt if containership activities were to be sited here; land available for storage and service to container activities would be severely constrained by the immediately adjacent residential area.

The remainder of the water's edge in East Boston is in the process of being transformed to uses that are not port-related, and this area, too, is exceedingly constrained by groundside access. As the oldest portion of the East Boston port area, the waterfront served the clipper ship era well, but present port uses are constrained by lack of space and by deficiencies in the access roads that serve them. The availability of transit access to community centers has contributed to the reuse of parts of the waterfront. A new school and new housing now occupy part of the old port frontage and its future development will continue in this direction. A roadway of limited dimensions to connect this area to the expressway network could be constructed along an old rail right-of-way. The issue raised by building a roadway in the present right-of-way is that it will only reinforce the barrier that the rail cut now represents. Another alternative or costly possibility is to fill the right-of-way and to create an arterial street to remove the barrier and to improve access at the same time. Even with this new harbor connection, road users would be constrained by the existence of the tunnels for outside connections. The tunnels are severely congested at the present time and limit movements of certain types of cargoes and vehicles. A third harbor tunnel has been proposed and would serve this area via the proposed road in the rail right-of-way, but the same tunnel limitations would prevail for truck access between this portion of the Port and the expressway network.

SOUTH BOSTON

South Boston, also a peninsula, is constrained by its bridge connections. It contains the only area of the City constructed primarily as a port area, the northern half of which is still port and industrial in nature. Recent events have made it the area with the greatest potential for new port-related and other uses. The decommissioning of the South Boston Naval Annex provided a vast amount of land which, coupled with the vacant land formerly occupied by rail yards, affords a major opportunity for new development.

Proposals for ground access in this area have focused on new connections to existing expressways. A seaport access road has been recommended to provide more direct connections to the Southeast Expressway, the Massachusetts Turnpike and the Central Artery. The seaport access road in South Boston is the key ingredient in development of the industrial portion of the South Boston peninsula. Without it, the traffic generated by development at the South Boston Naval Annex as well as the Fish Pier will only further congest the network of existing local streets. The configuration and alignment of the new road will determine the shape and location of development proposed for the industrial area of South Boston. While the residents of South Boston are sympathetic to and, even in some instances, enthusiastic for the developments that are proposed in the old industrial areas, they are adamant in their opposition to the location of a stadium in this area. Instead they prefer development that will offer jobs and new opportunities for South Boston residents.

DOWNTOWN

The reuse of previous port areas in Downtown Boston for housing, offices, and recreation has been underway for many years. This has accelerated in recent years as a result of both public and private investments. Virtually all of the new uses have transformed the aging shipping and warehouse areas into a revitalized part of Downtown.

Throughout Boston's history, this area has had constraints on its groundside access. Its very congestion has in part made it attractive to the people who seek it. Access to this portion of the waterfront is provided in significant part by the transit network; it is not particularly well served by the regional expressway network. The Central Artery is the only major highway serving this area and it, too, is very congested. As the Downtown port area has increased in attractiveness and grown more congested, pressures to the environment have developed through

depressing the Artery in a tunnel and adding a new transit facility in the corridor. If the Artery is tunneled, it will provide new transportation opportunities and also space for new development on the decks above it.

CENTRAL ARTERY

The Central Artery is the most important highway in Downtown Boston. It connects the region's major expressways and serves as a collection and distribution facility for the Downtown street system. The Artery serves the seaport areas of Charlestown and South Boston and, with the existing harbor tunnels, provides access to the East Boston waterfront and to the airport as well.

The elevated Artery was built in the 1950's principally to provide improved access and relief to congestion on the Downtown street system. In the intervening period, an increasing proportion of traffic on the highway has become destined for places outside Downtown. With the decision to curtail additional expressway construction leading into Downtown, traffic pressure on the Artery has increased. At the same time, public sensitivity to environment and community disruption caused by the facility has grown.

Beginning in the early 1970's, a series of studies was conducted to determine what might be done to solve these problems. Various alternatives inside and outside the existing corridor have been examined, and it has been determined that reconstruction of the Artery in its present corridor is the only feasible option. These studies have been undertaken with the knowledge that the decks of the Artery will need full reconstruction within the next decade. Since deck replacement will provide massive disruption to existing traffic and the larger community, other alternatives have been examined. This reconstruction could take two basic forms: (1) replacement of the decks along with modest improvements to ramp locations and connections; or (2) construction of a new underground facility in the present alignment with the potential for adding an integrated transit way in the median of the new highway tunnel.

The costs associated with redecking of the Artery are approximately $35 million. Although this cost is low in comparison to the complete reconstruction of the facility, the end product will be the existing facility with upgraded decks and all of its present disadvantages to traffic and to the City.

Costs of the new facility would be over $1 billion. While these costs would be funded with federal interstate assistance, the size of both the

federal and state investment will be a major issue for both levels of government.

The issues posed by the need for improvements to the Artery are similar regardless of which course of action is chosen. The scale of the proposed reconstruction may bring extensive disruption during the construction period, but the proposed improvement brings many advantages to the movement of traffic through the Downtown area. New underground interchanges would avoid the present conflicts of regional traffic which is now using local streets for interchange connections. Noise and air pollution would be substantially reduced and controlled. Environmental amenities would enhance Downtown renewal and rehabilitation efforts. New ramps and access facilities would be brought to national standards, improving both the operations and the safety of the Artery. Additional land area would be created to link the Downtown commercial and waterfront areas and to increase the tax base and job-creating potential of the City.

Local individuals and organizations have taken strong positions against new highways that encroach on existing neighborhoods. However, this stance has been modified in instances where the perceived impact of the transportation improvement is of benefit to the local community. In Charlestown, for example, the local community is fully supportive of the local Artery proposal to date, and is working in concert with public agencies toward implementation of the proposed scheme. This is in contrast to the past when local people opposed port development because of anticipated truck impacts on local streets, and when highway schemes were opposed because they required the taking of homes.

Further south along the Artery, the North End community and the newly established Waterfront community have been at odds over revitalization efforts. The North End, with its established ethnic character, has evidenced major concern over traffic impacts on the local community and is wary of improvements that may enlarge benefits to other groups at their expense. At present, North End residents are cautiously in favor of further Artery studies, provided there are sufficient benefits after construction to warrant consideration of full reconstruction. Waterfront residents, by contrast, have been the beneficiaries of major redevelopment efforts, and new construction has been geared toward strengthening their portion of this neighborhood. Yet, waterfront residents exhibit the same degree of wariness about potential Artery improvements and will strongly urge their case for environmental improvements as studies proceed.

Unlike the neighborhoods which are cautiously open to the recon-

struction of the Artery, the business groups concerned about transportation improvements voice more reticence. Traditionally supporters of new highways, they are worried about the disruption to business that might occur during a lengthy reconstruction period.

SUMMING UP

The provision of adequate access has been the linchpin in development on the waterfront, and is as much an issue today as it was 100 years ago. Whereas in the past the provision of access was a function undertaken solely by the private sector or was a joint public/private undertaking, today this area is solely in the domain of the public sector. The Highway Trust Fund has been the major source of monies available for road construction, but in the port area, where there is a preponderance of channels, the cost of roads is significantly increased by the need for bridges. Over the long run, the concerns that are raised today are not so much in regard to the costs of building roads and bridges as in regard to their long-term maintenance and improvement. Federal funds are available for large capital requirements, but interim maintenance must be provided out of local funds. The constraints on these funds diminish the enthusiasm of local jurisdictions for such new facilities. This issue is one that will require increasing attention in the near future.

MANAGEMENT OF THE HARBOR

The arguments in favor of rationality suggest that an overall harbor planning mechanism should be created. This is counterbalanced by the long-entrenched tradition of home rule. Also, without any specific mechanism for the allocation of benefits and costs among jurisdictions or among population groups, no clear picture emerges even as to the policies that should underlie such a planning process. Existing mechanisms seem to be sufficient to allow for and to respond to the kind of incremental change that has characterized the way development and redevelopment of the waterfront has proceeded. Whereas in San Francisco's Bay Area there was a regional constituency concerned about the proposed accelerated development, the opposite problem exists in Boston where the need is to identify appropriate catalytic factors to enhance appropriate and desired development.

Studies have identified 130 governmental organizations—federal, state, and local—that have some form of compulsory jurisdiction over one aspect or another of the harbor. The fact that there has been considerable redevelopment and revitalization in the past 25 years within

this governmental context is testimony to the persistence and enthusiasm of the public and private entities involved. Recognition of this complicated maze of planning, regulatory, financing, and operating agencies has raised the question as to whether or not Boston Harbor is a legitimate entity for the focus of some comprehensive governmental mechanism that would determine its fate. This debate preceded Coastal Zone Management by a few years, and a year after the Massachusetts Coastal Zone Plan has been adopted, the issue still remains unresolved. The strongest argument and the most powerful force that stands in the way is the tradition of home rule of communities in Massachusetts. Not only is home rule a question among the cities and towns that lie along the harbor, it is also a question among the individual neighborhoods of the City of Boston that front the harbor. In 1967 a Boston Harbor Commission was created by the legislature to look at the possibility of creating a regulatory mechanism through which governmental decisions on development and conservation in the harbor would be controlled. Twelve years later, this legislation has been drafted but has not yet been submitted for debate. Legislation, not entirely dissimilar to the San Francisco Bay Conservation and Development Commission, drafted for Boston Harbor intended to create a mechanism that would weigh and allocate the benefits and costs among population groups for the siting of a range of facilities along the waterfront. However, Boston Harbor is at a far different stage in its development than was San Francisco when the commission was created. In San Francisco the "Save the Bay" forces were reacting to an overstimulated market intent upon filling the bay to create the necessary land demanded for a wide range of uses. The situation was more analogous to what Boston faced a century ago when hundreds of acres were created by fill in Charlestown, East Boston, and South Boston. In the 1960's and 1970's, however, it was the opposite problem that was in force. Acres of underutilized and vacant land lay open for development, caused by the decommissioning of military facilities, changes in cargo-handling technology, etc. Those concerned for Boston Harbor have had to face the question of how to make development happen on these sites and how to step up the pace of that development.

Those concerned about Boston Harbor realize that there are a number of unanswered questions that must be faced before any comprehensive mechanism can be put in place for dealing with harbor development. Some of the issues of priorities and goal conflicts that arise include such questions as: Accepting that urban waterfront land is a finite resource, who should make decisions regarding its allocation? How should the priorities of neighborhoods, the City of Boston, the metropolitan area,

and the New England region be traded off? Who should be accepted as representative of the interests of each group? Who should benefit from waterfront development? Should recreational facilities be local or regional? Should housing be planned primarily for present residents of the area or should new groups be provided for? How can the unique needs for regional shipping and energy facilities be accommodated? What weight should be given to preserving space for future development?

In earlier periods of development, these issues, if they arose at all, were considerably simpler to resolve. In many cases, conflicts were minimized by simply creating new land. The primary prerequisite for successful development was adequate funding. Intervention of residential communities in development decisions impacting them is a recent phenomenon. More important, the perception of waterfront land as a scarce and highly desirable resource completely changes the development picture around the harbor.

ISSUES AND ALTERNATIVES FOR THE FUTURE

Development pressures for waterfront land in Boston are likely to continue to be strong in the next decade. Development pressure can be expected for two major types of development: (1) traditional maritime, shipping, and port uses requiring waterfront location on a main shipping channel; and (2) nonmaritime, commercial, residential, and recreational uses which are enhanced by waterfront locations such as the successful redevelopment of the Downtown Waterfront.

Development proposals will require decision makers to grapple with issues and problems in two major areas. The first are issues of compatibility: the impact of industrial and nonindustrial uses coexisting on the waterfront, and of industrial port use expanding adjacent to nonwaterfront residential areas. These problems, all significant, are technically soluble.

The second are issues and questions of goals, priorities and decision-making authority. These questions must be grappled with if waterfront land-use decisions are to be made, but in most cases they defy a definitive solution. Broad participation, negotiation, and compromise will most likely provide the avenue to agreement on these matters.

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The Port of Baltimore

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IMPACTS OF CHANGES IN SHIPPING METHODS, CARGO TRENDS, AND TECHNIQUES ON LAND USES

TRENDS IN CARGO AND THE IMPLICATIONS FOR FUTURE LAND USE

Throughout the history of the Port, land-use decisions have resulted primarily from demands made by a specific type of trade technology. Until the 1950's and 1960's railroads dominated much of the land area adjacent to the shoreline because they served as the main transportation mode. Finger piers lined the waterfront to service cargo movement, which was dominated by break-bulk goods. Cargo was not containerized in standard units and was loaded directly to or from the pier and onto a train for long hauls or small trucks for local delivery. In many cases the entire capacity of a ship could be handled on the pier or in an adjacent warehouse. The loading capacity of ore and coal piers was well below the 2,000–6,000 tons per hour now available. Industry located at the water's edge to send or receive goods on ships or use water from the harbor for production or discharge of by-products and effluents. Because the demand for land on the shoreline, which had direct access to employees, raw materials, and other needs, was in short supply, industry utilized every available parcel for production purposes. Large parking lots for employees, truck shipments, and containers were not necessary as they are now. Huge quantities of vacant land and rail yards for storage of ore and coal, which are needed as backup to rapidly load today's vessels,

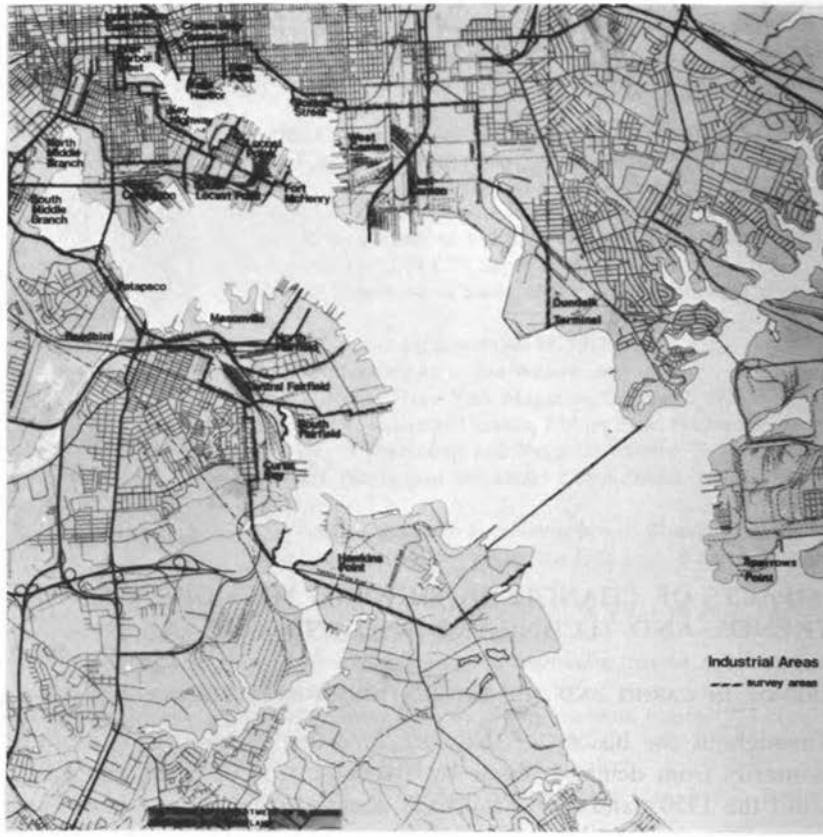

FIGURE 1

were not in demand. This smaller scale of shipping and manufacturing technology was responsible for the development patterns found in Fells Point, Canton, Locust Point, and the Inner Harbor before redevelopment (see Figure 1).

The technology of trade has had dramatic impacts on the use and configuration of land in the Port in the past 15 years. Container facilities, specialized automobile import yards, giant grain, coal, and ore piers, high-capacity cranes, and consolidating sheds are terms and structures that were rare before the early 1960's. Each of these requires specific land configurations and acreage that dramatically change the shoreline and require large-scale support services.

The shoreline and land area of the harbor have undergone and will

undergo major changes in response to supplying new facilities for Baltimore's shipping industry. Container facilities, which require large amounts of backup space, are often created by filling water areas and are dependent on truck transportation and access to adequate highways.

Since the early 1960's, when the Port of Baltimore took an early lead in the development of container facilities, over 600 acres have been devoted to this method of cargo handling. This involves almost 10 percent of the total land area within the City's coastal zone. Dundalk, Sea-Land, and the South Locust Point Marine Terminals have altered not only the land configuration of the shoreline but have necessitated transportation networks that have never before been required. These facilities also directed the future operations of the Port toward a specific type of market and trade.

Decisions to continue and expand this trade have very real implications on the land and shoreline of the harbor, the transportation network, the labor market, and adjacent land uses. Construction of the proposed Masonville Marine Terminal will have dramatic impacts on the harbor's environment (see Figure 2). The Masonville Marine Terminal, which will require filling approximately 190 acres of water, will be developed to meet the projected needs of an expanding container and general cargo market. The Hawkins Point Marine Terminal is currently proposed to respond to a very specific need, the increasing importation of automobiles. Each of these facilities will require a certain response by railroads, highways and access roads, truck transport, and support services. Each facility will also generate, along with the required services, very real impacts on adjacent land uses, communities, and the water of the harbor. The Maryland Port Administration also plans to continue to improve the North Locust Point Marine Terminal, expand the Clinton Street Pier, and complete the addition of 2 berths at Dundalk (see Figure 2). Private shippers will also require additional land and facilities to meet expected increases in general cargo, ore, coal, and grain. Several facilities, e.g., Western Maryland Railway's Port Covington Yard, the B&O's Curtis Bay Yard, and Indiana Farm Bureau Cooperative Association's grain processing plant, currently utilize all available capacity and/or land for existing operations. Planned expansion will require some additional land and more efficient equipment to increase productivity and will improve access for shipments.

The Maryland Port Administration's report, *Port of Baltimore—Opportunities, Performance, Forecasts, Impacts, 1977,* is an indication of the direction that the agency forecasts for the Port. Increases in general cargo, container trade, and importation of automobiles will dominate the demand for land development, new land created by fill, and expansion of

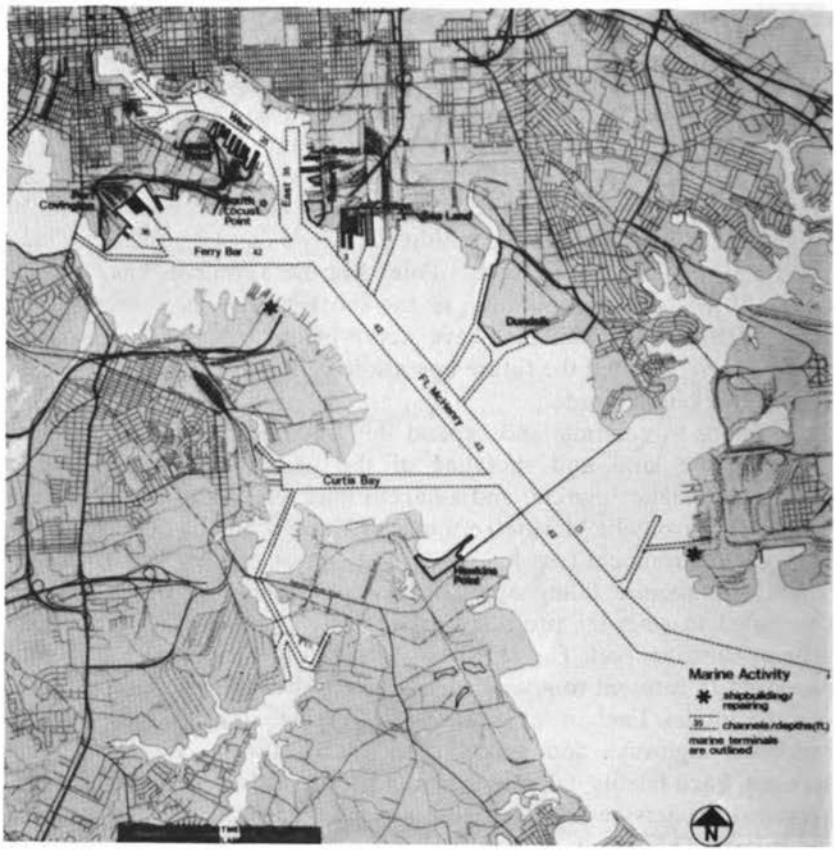

FIGURE 2

existing facilities. The planned 50-foot Federal Channel also gives a direction to the anticipated requirements of some segments of bulk goods. Although ore shipments are expected to increase, much of this will be reflected in the additional tonnage of ships calling on Bethlehem Steel's Sparrows Point Plant. However, some increased need for open storage will be required, possibly in the Canton and Fairfield areas. Indications from the operators of petroleum storage facilities suggest that there will be no additional tanks necessary. Increased demands, if they occur, can be met by greater flow-through to delivery trucks and some additional barge trade.

Forecasting the direction of a major port is a complex task and requires the coordination of many areas of expertise. Even more difficult

is a determination of what facilities will be required to meet future need, when they will be needed, the subsequent impacts on the Port, the use of land, and the demands to be placed on the local jurisdictions. The first step in this process is an open discussion of issues and an evaluation by private, local, state, and federal interests of the direction and capabilities of the Port of Baltimore.

MITIGATION OF NEGATIVE IMPACTS FROM DEVELOPMENT OF PORT FACILITIES

Development and operation of port facilities often result in negative impacts to the local jurisdiction. Port facilities, depending on ownership and operation, may yield little or no taxes while demanding increased operating costs for the local jurisdiction to maintain highways, mitigate impacts caused by an increase in vehicular movement through commercial areas and communities, and provide fire and police protection. Private development can also have the same end result. The B&O and other railroads are exempt from property taxes on holdings in the state of Maryland; much of the apparatus used for bulk goods transfer and storage is classified as equipment, not personal property; and vacant land, periodically used for open storage, returns very little to the City.

Environmental

Expanded and/or new marine terminals and industry often require filling portions of the harbor. The harbor has experienced a considerable amount of filling during its operation of over 200 years. The Inner Harbor, portions of Fells Point, South Locust Point, the Dundalk Marine Terminal, Reedbird Island and landfill, Sparrows Point, B&O/Kennecott, and the Patapsco Treatment Plant have expanded on fill or utilized the harbor for disposal. Marginal marine terminals require a maximum amount of frontage for berths, which is often provided by filling. While these are generally productive and water-related uses for the Port, the harbor's water has also served as a disposal site for production by-products, waste disposal, and domestic landfills, and as a source of creating cheap land.

The impacts of filling the harbor vary with each project and are complex. Removal of water volume from the harbor decreases its flushing ability, removes habitat for aquatic life, and increases the difficulty of returning the harbor to an acceptable level of water quality.

Use of land adjacent to the Port also has impacts on water quality. Runoff from paved surfaces, production facilities, and storage areas

usually discharge into the harbor. Facilities that are poorly maintained are often a major source of water pollution through runoff and industrial accidents. Open storage of ores and coal, fertilizer operations, rail yards, etc., are significant contributors to water pollution in the Canton, Locust Point, Fairfield, and Curtis Bay areas.

Certain specific operations also periodically contribute to water pollution. Discharging of ships' tanks, although prohibited, sanding of ships' hulls while in drydock, airborne particles from grain or coal loading, etc., also contribute to pollution of the harbor's waters.

Surveys[1] of fugitive particulate emissions in the harbor area indicate that appropriate standards are exceeded by a factor of two or less. The major sources are wind- and vehicle-generated fugitive particulate emissions from dirt and gravel road surfaces. Approximately 50 percent of the emissions are from sources including cornstarch from harbor grain transfer operations in the Locust Point area, slag particulate, probably from operations within and around Bethlehem Steel plant at Sparrows Point, and sulfate generated by a combination of nearby operations and distant combustion of sulfur-bearing fuels. Because control methods have a relatively high percentage of efficiency, it is reasonable for operations within the Port to reduce fugitive emissions to a level of compliance. These controls are essential for the health of workers in the Port and of adjacent residents who are subjected to noncompliance levels.

Development of Adequate Compensation to Jurisdictions with Tax-Exempt Port Facilities

Certain properties in the Port are totally tax exempt while others, although tax exempt, make a payment to the City in lieu of taxes. This is usually based on the amount paid in taxes for the land prior to the development of the port facility, which often is insignificant in comparison to the value of the improvements. As an example, the site of the proposed Masonville Terminal currently returns approximately $100,000 per year to the City in taxes. Although the Maryland Port Administration (MPA) plans to develop a major marine terminal which will represent an investment of between $125–150 million, the City likely will not receive any increase over the current taxes. However, the private port industrial and commercial sectors, which are also maritime oriented, must carry a full responsibility through taxes. The MPA argues that because the Port collectively benefits the City and state through jobs and various secondary impacts, publicly developed facilities should not be required to compensate a local jurisdiction through taxes. However,

there is a large segment of the Port, representing the private maritime and industrial sector, that, while also providing numerous jobs and secondary benefits, does pay its full share of taxes. The MPA includes the private maritime and industrial sector in its figures to illustrate the tremendous impact the Port has on the state and local economy, but those interests do not enjoy the special tax status and access to capital funds available to this state agency.

The private port operator seems to be operating under two disadvantages. The first places the private sector in the position of competing with a public agency that has access to state funds for large capital developments. The second requires the private shipper or industry to pay full taxes while the major competitor, the state agency, pays no taxes, often collects and keeps that portion of the taxes designated for the jurisdiction that is included in the leasing of space or terminal, or makes a payment in lieu of taxes. A method should be developed to equalize the fiscal responsibility to a local jurisdiction carried by the MPA and the tax burden assumed by private and public port interests.

Provisions of Adequate Rail and Highway Systems

An efficient port is dependent on a transportation system that is balanced, up-to-date, and flexible enough to provide services to the wide variety of users. However, the reality of the efficient movement of goods in the Port of Baltimore is burdened by a rail system operated by several companies, some with fragmented responsibilities and outdated facilities, an as yet incomplete interstate highway system, many local streets either well beyond capacity or in poor condition, conflicts between truck routes and residential areas, and a port that has terminal facilities separated by the harbor itself requiring several transfers to move goods to their users. The following identifies, in greater detail, major issues in two functional areas.

Highway What are the responsibilities of the public and private terminal operator and developer to provide adequate access to and from a facility and to deal with any negative impacts associated with increased traffic?

Port facilities, especially general cargo and container terminals, are heavily dependent on truck transport. Access to and from terminals is often on local streets, which are usually narrow and pass through residential and local commercial areas. Transfer of ore and bulk goods is often by trucks which, because of the weight involved, are especially damaging to roadways and adjacent structures. Heavy truck traffic

through these areas causes congestion, increases air and noise pollution, presents safety hazards, and subjects communities to vibrations that can damage structures. Canton, Fells Point, South Baltimore, Locust Point, Brooklyn, and the Inner Harbor are subjected to high volumes of traffic which are difficult for a community to live with and have, in some instances, reduced the residential, commercial, and open space viability of these areas. With the development of terminal facilities, consideration must be given to the construction of adequate transportation routes and implementation of measures to mitigate negative impacts.

Rail The rail system serving the harbor is in generally poor repair and lacks adequate facilities to serve modern port operations. The poor condition of facilities coupled with the inherent problems associated with a port developed on numerous nonconnected peninsulas has led to a lack of consistent and efficient service to various areas.

Much of the rail system still utilizes remnants of track and alignments developed 80–100 years ago. Rail users in older sections of the City must move supplies and products over tracks in street beds or under design standards formulated for different conditions. The condition of much of the system makes the movement of hazardous products and materials through heavily populated areas extremely dangerous. This danger is heightened by the fact that many of the products are not labeled or characterized by the railroads, industries, or public agencies. This problem also exists in the movement of goods by trucks and storage at terminals.

Bottlenecking in the Baltimore area negatively impacts the movement of goods within the Port and to and from Port facilities.

Both the freight and passenger lines must utilize tunnels designed a number of years ago. This causes a complex scheduling problem and the potential that all traffic through the region can be halted by a single accident. There are also limitations to the size of goods that can pass through the tunnels.

Several proposals have been developed that would separate passenger from rail traffic providing more efficient service to the Port. Resolution of this conflict would do much to ease internal port goods movement, facilitate traffic through the Baltimore region, and provide a more balanced transportation system.

MIX OF TRADE THAT GENERATES THE GREATEST BENEFIT TO THE CITY IN TERMS OF EMPLOYMENT AND FISCAL SUPPORT

The activities and supporting facilities of the Port of Baltimore serve as a significant source of jobs in the state and region. The Port and its related activities also generate approximately 10 percent of the gross state product. While these are impressive figures, they are more useful for local evaluation when placed in perspective with the contribution that other employment categories supply to the City and region. Another dimension that should be reviewed when calculating the impacts of the Port and trade categories is the specific return industry and trade types make to a local jurisdiction in terms of jobs, fiscal support, negative impacts which require a response by the jurisdiction, and the appropriate use of harbor land.

The impacts of the Port and trade types on jobs, land-use requirements, and return to local jurisdictions are reviewed in the following sections.

Jobs and the Port

Calculations made in 1973[2] have attributed 168,000 jobs in the state to port and port-dependent activities. Approximately 26,000 workers—stevedores and longshoremen, railroad and surface transportation workers, steamship company employees and agents, etc.—are directly related to Port activities, and about 49,000 jobs in shipbuilding, repairs, port-dependent processing, etc., to indirect functions. Primary metals processing is the single largest segment and occurs in the indirect category supplying 26,200 jobs. This is primarily based on a single employer, Bethlehem Steel's Sparrows Point Plant. Shipbuilding, including repairs and dismantling, is the second largest employment category with over 11,000 jobs and is also an indirect function.

While generalized employment figures provide an overview of the impact of the Port on the state, a more detailed look is required to provide a useful tool in making specific land-use decisions. The relationship between number of jobs and the real economic impact of port operations is also difficult to translate into useful information. The planner, when making land-use decisions, faces the challenge of utilizing long-range projections and gross figures to determine methods to maximize employment and economic return to the local jurisdiction.

With the relative scarcity of available land with direct access to shipping channels, the principal objective of a jurisdiction should be the maximization of that land in terms of jobs and taxes while minimizing

any negative impacts. This requires an understanding of what sectors of industry and maritime operations are expected to grow with the lowest incidence of negative impacts.

While the Port's trade is expected to increase at a steady rate, the standard industrial code number, which includes marine terminal operations, is expected to decline at a rate of 1.4 percent in the 1970–1980 period in the Baltimore area. This can be tied, to some degree, to the increasing dependence on container goods movement and bulk cargo shipment. Both of these operations require large amounts of land resulting in a low land-to-job ratio. This seems to indicate that land with access to channels will continue to be used as a resource for maritime operations; however, the return in terms of jobs and taxes to the local jurisdiction may show little or no increase.

If the City is to maximize positive economic impact, every effort should be made to provide suitable development opportunities for growth industries that are capital and job intensive. This will require identifying sites and improvements that can satisfy industrial and commercial uses which have a particular need for locating in a port area and meet the objectives of maritime operations.

Jobs and Land Use

Surveys of land use in the harbor reviewed the employment and assessments of water-dependent, water-related and non-water-dependent industries. From these surveys, it is apparent that in terms of employment, non-water-dependent industries rank the highest. This would seem to develop an order of priority for desired land uses in the port area. However, water-dependent uses must necessarily be given priority for land along the water's edge that has access to shipping channels. Direct support facilities for water-dependent uses must also receive priority consideration for land in the Port. Land in the industrialized harbor area, but without access to primary channels, should then be utilized for industries with high employment to maximize the return to the City from the area's coastal zone.

Within the category of water-dependent and water-related uses lie a set of subpriorities that can be established dealing with jobs and economic returns.

Water Dependent: Shipment and Receiving/Storage of Bulk Goods While the shipment of bulk goods, e.g., coal, ore, fertilizers, grain, petroleum products, etc., is important to the region and the state, the return to the City in terms of employment and taxes is less than any other category.

The actual transfer facilities, loading piers, elevators, etc., have only a moderate employment rate. The storage of bulk goods on vacant land adjacent to the shoreline and large rail yards for holding operations return less than any other land use to the local jurisdiction. Often storage areas employ fewer than 0.25 worker per acre, and, in some instances, the land is totally tax exempt.

A prime example of a use adjacent to the shoreline that could function inland and free up waterfront land is the petroleum products storage tanks in Fairfield. The majority of the products are received through pipeline, although barges are used by several companies for approximately 20 percent of their volume. Even the connection to the pierheads is through extended pipelines, which could allow the storage facility to be located further inland. If storage facilities were located inland, valuable shoreline would be available for water-dependent uses.

Bulk goods movement through the Port yields a direct and indirect impact of $11.29 per ton while general cargo returns $55.91 per ton. The low yield in jobs and assessments, coupled with the potential negative impacts to adjacent land uses associated with bulk storage and transfer, seems to assign a low priority to the use of waterfront land when inland alternatives are available.

Marine Terminals Marine terminals vary greatly in size and use. Although a number of terminals handle general cargo items, e.g., Rukert, North Locust Point, etc., the emphasis at larger terminals has been on handling containerized goods, special equipment, automobiles, etc. The MPA agressively pursued this market in the 1960's by developing the 550-acre Dundalk Marine Terminal as one of the most complete container facilities in the world. Fortunately, container goods have a high direct impact to the region and state. The values are best summarized in the 1973 report "The Economic Impact of the Port of Baltimore on Maryland." Although the information is several years old, the relative values are useful and are discussed in the following:

> In addition to the large impact differences found between general and bulk cargoes, substantial differences were also found within the cargo categories. Two of the most important general cargoes carried into and shipped from the State are containers and automobiles. Both of these are important Baltimore cargoes, and together account for almost 60 percent of the port's general cargo tonnage. Containerized cargo creates a direct impact of $21.65 per ton, and automobiles, $55.48 per ton. Containers are much more volume effective than automobiles, however, resulting in greater impact for each container than each automobile. The figures are $257.64 per container and $74.64 per automobile.

While the operations of marine terminals are critical to a diversified port, the direct return to a local jurisdiction is limited. Terminals generally only employ approximately four workers per acre and, in the case of state-owned facilities, are usually either exempt from local taxes or make only a small payment in lieu of taxes. There are also often considerable impacts on adjacent land uses resulting from the dependence of terminal operations on truck transport. If there are not adequate connections to the regional highway system, trucks must use local streets, disrupting commercial areas and communities and substantially increasing the cost of street maintenance for the jurisdiction.

Trade and Benefits In terms of developing a mix of cargo that returns the greatest benefits to the City, general cargo far outweighs the transport and storage of bulk goods. Within the category of general cargo, containers, goods requiring specialized handling, break bulk, automobiles, etc. accounted for almost one-half of the total value of exports in 1975. These same products were responsible for over one-third of the value of imports in 1975.

Looking only at the returns from trade, the City should encourage the growth of general cargo operations, especially within the private sector. However, this must be balanced with the high return the City receives from the development of water-dependent or related industry. Appropriate development sites within the port area are difficult to locate and industry must often compete with bulk goods facilities and marine terminals for sites with access to shipping channels.

While marine terminals are a positive factor for the Port, there are conditions which, if implemented, would greatly increase the benefits to the City: (1) an equitable method for compensating the jurisdiction for the tax exempt status of state facilities; and (2) mitigation of any negative impacts generated by the operation of port facilities.

REVITALIZATION OF WATERFRONT LAND AND BUILDINGS

REUSE OF VACANT OR UNDERUTILIZED INDUSTRIAL LAND

Throughout the primary industrial areas adjacent to the harbor, a number of parcels of land have become vacant or are currently underutilized. This condition is especially evident in Canton, Boston Street, Fairfield/Curtis-Bay, and, to a lesser degree, Hawkins Point (see

Figure 1). Much of this land is actually vacant, although these parcels are generally small (under 5 acres). The greatest amount of land falls into the underutilized category—land or buildings that are not realizing full potential in terms of employment, taxes, and utilization relative to proximity to primary shipping channels and access. This definition encompasses a wide range of uses—land utilized for periodic, open storage of ore, coal fertilizer, etc., rail yards that see limited service, tank farms not dependent on water access, and vacant or derelict buildings and piers. While land often supports an active use, the City must determine if the level of return to the Port and the impact on other uses is warranted. If land is actually vacant with significant size and adequate access, mechanisms should be developed to return the parcel to optimum utilization. Vacant land not only can be a negative factor in and of itself, but it also fails to supply full potential to adjacent industries. Often vital linkages either are not provided or are removed by land uses leaving an area.

Underutilized land, unlike vacant land, is more difficult to define; it is also more difficult to determine an accurate account of return to the jurisdiction and Port and the relationship to other industry. The additional factor of relocation of an existing use to make the land or building available to a more productive use reduces the attractiveness for public involvement.

Uses that currently occupy waterfront land with access to shipping channels but are not related to that access also present a question of optimization of port land. Many of these uses are employment intensive and supply the City with a high return in terms of taxes and jobs. However, there are uses—manufacturing, warehouses, etc.—that occupy shoreline, employ few people, and pay limited taxes. The Department of Planning will explore the effectiveness of relocation of low return businesses occupying prime waterfront land to inland areas as part of the Commerce Cities Project.

The problem of vacant and underutilized land and buildings has prompted the Department of Planning to review, in detail, land uses for all major areas around the harbor. This information is transferred to the Mayor's Physical Development Co-ordinator and the Baltimore Economic Development Corporation to determine the role of the City in encouraging reuse of land. Currently, the City is continuing to explore and identify vacant and underutilized parcels and buildings and mechanisms to put these into uses that will ensure a high level of return and optimize land with access to shipping channels. The Department of Planning is also continuing to explore special port facilities zoning.

REUSE OF BUILDINGS FOR RESIDENTIAL/COMMERCIAL USES

Although generated by a change in technology and maritime operations similar to that which resulted in vacant and underutilized industrial land, buildings available for residential and/or commercial reuse are found only in limited areas of the Port. The majority of the structures are in Fells Point, with a few buildings scattered in other areas (see Figure 1).

The Inner Harbor development has identified several major structures for reuse. The Power Generating House located on Pier 4 and several ancillary buildings are to be retained for use as a restaurant and mixed commercial/residential buildings. Inner Harbor East and Falls Harbor also contain several buildings either in the process of renovation or scheduled for adaptive reuse. Currently, plans are under consideration for utilizing the waterfront for public access and construction of a relocated wholesale fish market.

Fells Point, as indicated earlier, holds the greatest potential for adaptive reuse for residential and commercial development. This potential has been realized in the Fells Point Land Use Plan prepared by a consultant and the community. A major change in land-use designation from industrial to residential, residential/commercial, or commercial has been proposed. This would allow the reuse of a number of warehouses and smaller shops for residential/commercial purposes while maintaining the maritime/commercial use of portions of the shoreline. Preliminary proposals have been reviewed that call for conversion of multistory warehouses into apartments or condominiums with commercial space at ground level. When possible, developers have proposed marinas and public access along the shoreline. Because the area is densely developed, access and parking have proven to be the most difficult problems. The community and City realize that redevelopment will require construction of parking structures to accommodate both residential and commercial uses. These must be sited and designed to be convenient for the users, yet should be in scale with surrounding buildings and should not obscure access to the waterfront or block views.

Because of the increased desirability of older buildings adjacent to the shoreline for reuse, the private market has assumed much of the development responsibility. This occurred after the City made basic improvements and initiated major projects in the Inner Harbor and Fells Point. In Fells Point the City has moved away from offering houses at a minimal price and opened the sale to competitive bidding. Even with the prospect of much higher sale prices, the response has been heavy. It is anticipated that within a few years even vacant land adjacent to the shoreline will become extremely desirable for residential redevelopment.

The Fells Point-Inner Harbor areas offer the city resident and shopkeeper an unusual opportunity to participate in the rejuvenation of urban areas that hold the special attraction of access to the waterfront. The City will continue to explore and identify opportunities to continue this growth and improvement to communities. To maximize this redevelopment, the city, state, and federal governments must work creatively to provide the expertise and funding to make this happen and benefit the largest possible segment of the population.

MEETING THE NEEDS OF THE PUBLIC FOR ACCESS TO THE WATERFRONT

BALANCE OF COMPETING PRESSURES FOR WATERFRONT LANDS—PUBLIC AND PRIVATE

The basic right of public access to all coastal tidelands has been reinforced by various Maryland court decisions over the past 5 years. The courts have concluded that ownership of the land lying between mean high water and mean low water is vested in the state of Maryland and held in trust for public use. However, old restrictions on the public's right to cross private waterfront property from public thoroughfares limit the impact of these rulings. Furthermore, areas of historic public use have nearly been eliminated by the erection of fences, buildings, and other structures.

Within the Port of Baltimore the past development of shoreline industry and marine operations has limited the potential for public access. Of the approximately 6,125 acres of land associated with the City's coastal zone only 114 are in local federal parkland. A significant portion of that 114 acres is made up of Fort McHenry which has limitations on the types of uses. The majority of the coastal zone, over 4,600 acres, is zoned for industrial use. The remainder, or approximately 1,400 acres, is in residential and/or commercial use.

Because of the limited amount of land adjacent to primary shipping channels and the ties between certain industries, parkland has traditionally been relegated to a low priority. Existing development patterns have also minimized the link between residential areas and the shoreline. The lack of water quality acceptable to the majority of city residents has also diminished the demand for access to the waterfront. Generally, residents living adjacent to the shore gained access, on an informal basis, by using piers or streets ending at the shoreline. Residents from other sections of the City were accustomed to driving distances to beaches or taking steamers to other areas of the bay. Many assumed that since the City's

waterfront was largely devoted to port and industrial uses there was little possibility for public access to shoreline and water.

Several events coincided which dramatically altered the public's awareness and use of the shoreline. The once-popular bay steamers had given way to the automobile, leaving piers in the Inner Harbor in derelict condition. Much of the area north and west of the shoreline (see Figure 1) was occupied by warehouses abandoned as the trade moved or shipping operations changed. The availability of shoreline and land coupled with plans for extending the revitalized Charles Center to the harbor offered Baltimore the first large-scale opportunity to create public access to the waterfront.

The Inner Harbor has been successful far beyond the original expectations. Thousands of people use the promenade, marinas, office buildings, and open space each day. Most importantly, the Inner Harbor has rekindled an interest in the Port, the condition of the shoreline, and water quality. In fact, the greatest controversy in a number of years emerged in the 1978 elections over the appropriate use of what the public now perceived as their front yard. Future development has been guided to take advantage of the Inner Harbor's unique relationship to water. However, the City must carefully place structures along the shoreline that will maximize use of the water's edge.

With the renewed interest in the waterfront and living in the City, other areas have experienced increased pressure for redevelopment. Fells Point (see Figure 1) has undergone changes in its composition due to major efforts to rehabilitate homes and businesses in this historic waterfront community. Included in the redevelopment plan are specific recommendations for maintaining and improving public access to the shoreline and retention of water-oriented businesses, e.g., tugboats, ship chandlers, etc. Proposals to renovate vacant warehouses along the shoreline as residential buildings include public access easements and/or marinas.

There are several locations along the shoreline that are now vacant or underutilized and have been identified by communities as locations for shoreline access. Most of these are in private ownership or held by the City for right-of-way for highway projects. Proposals have been developed by several city agencies to take advantage of these opportunities.

While the City can exercise various options for land in its ownership, there is little legal basis to alter uses in industrially zoned property to allow for public access. The Department of Planning has worked with several fill permits by private developers to ensure public access, when possible, along the shoreline. Efforts have also been made to influence

the current landowners to secure the shoreline, clean debris, and landscape the edge.

However, impact on improving public access to the shoreline by projects of this scale is limited. The Department of Planning has initiated several projects and identified others that will significantly increase public access and use of the shoreline and water. These are discussed in the following section.

IDENTIFIED PROJECTS AS RESPONSE TO PUBLIC NEED AND OPPORTUNITIES

Middle Branch Park System

The Middle Branch of the Patapsco River (see Figure 3) is a natural resource of significant unrealized potential. With 6 miles of shoreline and 416 acres of water area, it is 20 times the size of the City's Inner Harbor. Through careful planning and development, this water body could become the City's most extensive shoreline recreation facility.

Today, however, the water's edge has fallen into neglect. It is strewn with debris, junked cars, and rotting buildings. The water is polluted by the outfall from the Gwynns Falls and several major storm drains. These problems are compounded by deep accumulations of silt which severely restrict the types of development possible along the water's edge.

Major uses along the shoreline include the Western Maryland Railway's storage yard, Swann Park, Baltimore Gas and Electric Company's Spring Garden Station, Carroll Industrial Park, the City's pyrolysis plant, B.G.&E.'s Westport Power Generation Plant, and the Carr-Lowrey Company's glass manufacturing facility. There are also numerous smaller concerns located landward. The underutilized Broening Park and several automobile junkyards occupy the south shoreline along Waterview Avenue. Open space continues south, past the South Baltimore General Hospital, to the proposed Reedbird/Patapsco Park.

Several residential areas are near the Middle Branch: Cherry Hill occupies a large tract of land to the south; Westport is situated between Russell Street and the industry on the western shore; and the South Baltimore community is clustered along Hanover Street and to the east.

Numerous studies have cited the potential for creating a major public, water-oriented recreation area along the Middle Branch. The protected nature of this water body makes possible recreational boating and marine activities not feasible in other active areas of the Port. The Middle Branch Park Plan (see Figure 3), prepared by the Department of

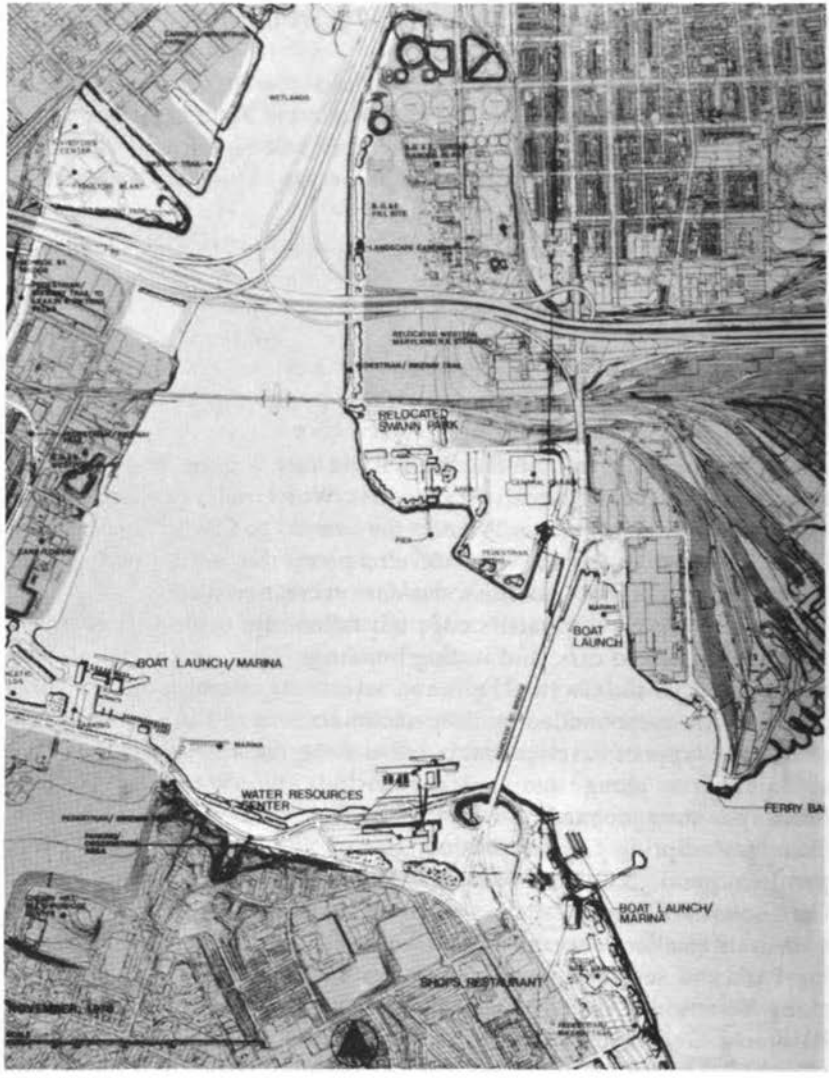

FIGURE 3

Planning, maps out specific actions that can be taken to restore the derelict water body and create Baltimore's largest shoreline park.

The plan calls for the creation of a park around portions of the perimeter of the Middle Branch, threaded together by a continuous pedestrian/bikeway trail. The goal is to provide maximum access to the

water and to increase recreational opportunities. The plan proposes the creation of boat launches, marinas, playfields, fishing piers, open green spaces, picnic areas, wetlands, and a water resource instructional facility. Easy access to the park will be provided by the new I-95 and I-395 expressways, Hanover Street, Russell Street, and by new pedestrian connections to adjacent residential communities. In addition, the park's pedestrian/bike trail will connect directly with the bike and pedestrian paths in the Gwynns Falls Park and Patapsco State Park and with a pedestrian/bike trail from the Inner Harbor and Federal Hill.

Reedbird Park

The City Department of Recreation and Parks, working with the Department of Planning, has developed a master plan for the conversion of the Reedbird and Potee landfills into a large park which would link the Middle Branch Park to the Patapsco State Park system. The plan (see Figure 3) proposes reclamation of approximately 90 acres on the west side of the Patapsco River and 30 acres on the east side. The master plan includes various recreational facilities such as ballfields, tennis courts, basketball courts, paddle boat, row boat, and sailing facilities, amphitheaters, fishing wetlands, and water quality instructional areas. A large portion of the park will be green open space with the possibility of an observation tower at the summit of an 80-foot mound located on the site.

The entire Middle Branch/Reedbird Park System, when completed, will link two major stream valley parks, the Gwynns Falls Park and the Patapsco River State Park, and offer the largest and most diversified water-oriented recreational facility in the region. Implementation is a costly and complex undertaking and will involve coordination of three local jurisdictions, many community groups, and state and federal agencies.

Fort Armistead

Originally constructed as one of five forts to guard the Port, Fort Armistead has been basically unused since the early 1920's. As part of the City parks system, the 38-acre fort offers a unique view of ships passing under the Francis Scott Key Bridge and the operations of the giant Bethlehem Steel's Sparrows Point Plant. The land is currently underutilized, although plans have been proposed to improve shoreline conditions, take advantage of the view offered by the bluffs, and develop playing fields.

Because the fort is isolated from highly populated areas of the City by

its location, surrounding industrial zones, and poor access, little public pressure has been generated to implement plans. The City sees the park as holding a potential for meeting increased demands for shoreline access in the future.

Fort Smallwood

Another of the five forts, Fort Smallwood, is actually located outside of the City. Plans have been developed for renovating existing park facilities and making improvements to encourage shoreline access. The Chesapeake Bay Foundation has leased space in the park to operate a harbor study program.

While these are major undertakings, the City fully recognizes a need to maximize public access to the shoreline in a productive manner. Development of these facilities will accomplish much to obtain that objective. However, the Department of Planning anticipates working with private and public sector, state and federal agencies, and communities to improve public access to the shoreline and water of the Baltimore Harbor.

LOCAL PLANNING AND THE COASTAL ZONE MANAGEMENT PROGRAM

HOW THE BALTIMORE REGION RESPONDED

Baltimore Metropolitan Coastal Area Study[3]

Maryland's pilot project for coordinating local government and regional involvement in coastal resource management is the Baltimore Metropolitan Coastal Area study. This study was funded by a demonstration grant from the Department of Housing and Urban Development (HUD) and is proceeding with support from the Office of Coastal Zone Management (OCZM). The purpose of the demonstration project was to define the relationship between comprehensive land-use planning activities carried out by the local jurisdictions and the Regional Planning Council (RPC) and the concepts of coastal zone management developed by the state under the Coastal Zone Management Act of 1972. The study serves as a means to integrate objectives of HUD land-use planning and Coastal Zone Management into local comprehensive planning activities and the Regional General Development Plan, and as a means to implement coastal zone management goals and permitting, licensing, capital programming, and budgeting. Finally, the study identifies coastal zone

management roles and responsibilities appropriate to each member of the Regional Planning Council and state government.

The Baltimore Metropolitan Coastal Area study outlines the process and issues that were addressed during program development for the Baltimore region, as well as issues that must continue to be evaluated as part of program implementation through the networking process. The study, then, serves as an example of an approach that local governments and a regional planning authority (the Baltimore Regional Planning Council) can use in conjunction with state agencies to evaluate, discuss, and resolve coastal issues of local and regional concern.

To carry out the joint work program, the following committees were formed to perform, oversee, review, and approve the end products of the study:

Task Force The Task Force was formed as an interagency group of technical personnel, funded with HUD and OCZM monies, and other personnel from various state agencies with a direct and continuing interest in the information assembled. This committee performed tasks specified in the work program and reported to the Technical Committee. Membership of the Task Force included representatives from Anne Arundel County, Baltimore County, Baltimore City, Harford County, the Regional Planning Council Staff, the Energy and Coastal Zone Administration, the Maryland Department of Transportation, and the Maryland Port Administration.

Technical Committee The Technical Committee is also an interagency group, which prepared the original work program and memorandum of understanding, continuously commented upon, and, when necessary, modified the work program. Members of the committee formally reviewed the results of the Task Force's work, and provided commentary from their own agency's perspective. The committee is responsible for integrating elements of Coastal Zone Management Program development, HUD 701 Planning, and 208 Water Quality Planning into the study.

The committee also served as a forum for state, regional, and local interests to resolve problems regarding use of baseline information in the Work Program, and to communicate information to government agencies, the Advisory Committee, and the public. Upon completion of the study, the Technical Committee has been responsible for overseeing the process of endorsement. Membership of the Technical Committee includes representatives from Anne Arundel County, Baltimore County, Baltimore City, Harford County, the Maryland Department of Health and Mental Hygiene, the Maryland Department of Transportation, the

Maryland Port Administration, the Maryland Department of State Planning, the Maryland Department of Economic and Community Development, the Energy and Coastal Zone Administration, and the Regional Planning Council Staff.

Coastal Zone Advisory Committee to the Regional Planning Council[4] The Coastal Zone Advisory Committee, now reconstituted as the Metropolitan Advisory Board (MAB), consists of members from local and state government, academic institutions, and private business, and appointed public participants. Federal agencies participate as observers. The Metropolitan Advisory Board's role is to review and comment on documents prepared by the Technical Committee, and to provide recommendations to the RPC on coastal policy and related intergovernmental issues. The MAB also makes recommendations to the RPC regarding the endorsement of the Regional Coastal Zone study.

In addition to the board the local governments in the region have established a coastal management structure in their planning offices. They have hired technical personnel to assist state personnel with program development, identified local coastal problems, and assisted in development of technical methods for management boundary determination, project evaluation, problem area determination, and public participation.

The Study Process The course of action adopted by the Technical Committee consists of three steps. First, coastal problems are described, recommended solutions are set forth, and commitments are made to analyze the proposed solutions. Second, the governments and agencies of the coastal area review the recommendations for endorsement. Third, a follow-up report is prepared on the outcome of the recommendations and the new commitments of the study participants to coastal zone management.

The first step of this process has been accomplished in the report "Baltimore Metropolitan Coastal Area Study—An Agenda for Action." It contains a realistic assessment of what should be done within the Baltimore metropolitan coastal area to manage coastal related resources and control the use of land. It is not a "plan," but rather a set of recommendations on actions to be taken by the participants in coastal decision making—citizens, local governments, regional groups, and state government.

The first element of the study is the delineation of the planning boundary. This process included the identification of issues of concern within the coastal area. Both general issues, such as the economic vitality

of the Port, and site-specific issues, such as the revitalization of Fells Point, were included. The mapping of natural and economic features relevant to boundary determination and the examination of existing shoreline-related land and water activities led to a determination of a boundary by each jurisdiction.

The second study element is a framework for understanding the problems of the coastal area. It consists of a set of management concerns (e.g., the decline in the ability of coastal waters to perform their natural functions) and a list of specific geographic areas where these concerns are evident. With this problem framework as a guide, specific goals and objectives regarding these concerns are applied.

The third element is the heart of the study. It concerns a discussion of each problem area in the coastal zone and presents recommendations for its management. The major areas of this element include sections on: the quality of our waters, the land/water edge, inland coastal area, the loss of resources, and growth pressures and their management.

State/Local Action on the Findings of the Study The fourth and final element of the study describes a three-step procedure for local/state decision making and action on the findings of the study. The Coastal Zone Management Act requires specific management policies, legislative recommendations, and implementation tools at the conclusion of the program development stage. To this end, this portion of the study analyzes the local and state role in coastal zone management and describes a process by which each study participant will examine the recommendations appropriate to its concerns.

As the first step in the study process, the Baltimore Metropolitan Coastal Area study can be used as a guide in tracing 2 years of work to coordinate action, to build consensus, and to resolve conflicts in the preservation, conservation, and use of its coastal lands and waters.

The second step in the overall process is the actual examination of the recommendations by the participating governments and agencies. The Baltimore Metropolitan Coastal Area study was distributed regionally in March 1978. From March through fall 1978, participants in the study presented the recommendations to policy-making bodies in each local jurisdiction and state agencies. These policy bodies evaluated the recommendations and endorsed those that are consistent with their goals and objectives.

The third step is the preparation and distribution of a report describing the outcome of the study's recommendations and the new commitments of the study participants to coastal management. The final report will attempt to provide this resolution by describing how each

jurisdiction and agency acted on the recommendations directed toward it, and what methods they have developed to carry them out.

The Coastal Zone Unit will incorporate into the state program recommendations approved by the study participants as a result of this review assuming that they are consistent with the state program. One of the major recommendations of the study is that the local governments develop coastal guidance plans in order to fully integrate coastal zone concerns into their land-use, zoning, and other relevant management activities. Adoption of the recommendations of the study is considered to be an effective way to enhance the basic structure provided by the state program at the time of its approval by the federal government.

Incorporation of recommendations will take place during Maryland's first annual recertification of the program. This recertification will occur 1 year from the date of approval of the program by the federal government. The endorsed recommendations will be placed in one of three substantive portions of the state program—policies, project evaluation, or program review.

THE CONTINUING FUNCTION OF THE COASTAL ZONE MANAGEMENT PROGRAM IN THE PORT

As indicated earlier the local jurisdictions and participating agencies are responsible for preparing coastal guidance plans containing information related to management policies, permit processes, decision-making criteria, standards of performance, plan implementation, and, where desired, land and water plans for the coastal zone. The Baltimore Metropolitan Coastal Area study (BMCAS) is also obligated to produce a follow-up report on the status of the recommendations and the new commitments of the study participants to coastal zone management.

The study participants have agreed to develop action programs which will consist of an interim report and continuing participation in the Metropolitan Board. The interim report will include a status report on the review and endorsement of the BMCAS, areas of policy or regulatory concentration, a determination of the effect of state and federal policies and programs on local actions, and identification of the Coastal Zone Unit's role with local implementation efforts.

The interim reports and management of BMCAS are the responsibility of the Metropolitan Advisory Board through the Regional Planning Council. Its charge is to:

- Simplify and clarify the channels of communication between coastal interests.

- Identify and analyze issues of broader than local concern and attempt to resolve them cooperatively on a regional basis to avoid later unnecessary conflict and administrative delay.
- Provide a means of two-way information and education exchange between the public-at-large and those charged with coastal zone management.
- Involve state and federal agencies in a metropolitan approach to solving urban coastal problems.
- Aid in local implementation of the goals, policies, and recommendations expressed in the Maryland Coastal Management Program and the Baltimore Metropolitan Coastal Area study.

The initial work of the Metropolitan Advisory Board will include:

- Compiling priority recommendations common to all jurisdictions and discussing implementation of same.
- Discussion of recommendations that should be changed, deleted, or added.
- Discussion of state program insufficiencies and how they might be corrected.
- Reconciliation of 208, Chesapeake Bay Program, and CZM overlapping functions and citizen participation.

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New York City Waterfront: Changing Land Use and Prospects for Redevelopment

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INTRODUCTION

Throughout New York's history, its waterfront has been key to the City's growth and prosperity. The City's 578 miles of shoreline, 14 bays, 5 rivers, 2 straits, and its large sound make it by far one of the best natural deepwater harbors in the world, with the potential for limitless recreational opportunities for residents and visitors alike. At one time, the fate of New York and its waterfront were inseparable: as the Port grew, the City grew. In fact, by the middle of the 19th century, the Port of New York was the nation's premier port; and by the end of the century, the City was the nation's leading city.

Over the past 50 years, however, a number of forces have significantly altered the relationship of city to shoreline. Yet, in most instances, the City's waterfront policies have failed to reflect the changed realities, despite the fact that they are as dramatic as the following:

- *The core of the City replaced the waterfront as the major provider of new jobs.* As the City's economy shifted from a manufacturing to a service base, the focus on economic growth and development shifted inland to the midtown area. Since 1948 282 major office buildings have been constructed adding 144 million square feet of space. By 1970 the number of jobs in midtown Manhattan had grown to 1.3 million.
- *Changes in the cargo-shipping industry resulted in a massive shift of maritime activities from traditional waterfront locations.* Of the 4.8 million

waterfront "hirings"[1] in the Port of New York in 1958, 72 percent took place on New York City piers. Manhattan alone accounted for 37 percent of all hirings. By 1978 New York City's share had fallen to 50 percent of the Port's 2 million hirings that year, with New Jersey piers accounting for the other 50 percent. The impact of this shift is most visible on the west side of Manhattan where, of the 36 piers owned by the City, 18 lie unused—many in dilapidated or burned-out condition—and none of the 18 still occupied are used for maritime purposes.

- *Construction of a modern highway system and bridge and tunnel network severely limited waterfront access.* At the turn of the century, the Brooklyn Bridge was the only major bridge traversing a New York waterway. Today, 24 major bridges span the City's waterways, and four tunnels carry vehicular traffic beneath the City's two major rivers. Their miles of access roads and the 67 miles of modern highways—some elevated, some at grade, some depressed—now line nearly 30 percent of the City's waterfront.
- *Expansion of public waterfront parks and beaches outpaced the City's capacity and ability to maintain them.* In 1933 New York City had only 1 mile of public beach. Today, there are over 18 miles of public beach and some 60 public waterfront parks. Together they cover a total of 84 miles of shoreline or 40 percent of the City's waterfront. Based on the acreage devoted to these uses, experts estimate that the City should be investing about $125 million annually to properly maintain its parkland and recreational facilities. In 1978 only $25 million was available for capital investment in parks.
- *The least desirable activities were assigned to the waterfront.* In 1928 nearly 40 percent of the City's waterfront was undeveloped. Today, less than 5 percent remains undeveloped. Since 1928 the City's two major airports were constructed; together they cover 11 miles of waterfront. In addition, 11 steam turbine and 9 gas turbine electric generating plants were built at waterfront locations; 13 water pollution control plants, 9 refuse landfills, 10 marine transfer stations, and 4 incinerators were developed along the shoreline.

Despite these major changes, the City's waterfront policies remained locked in the old realities. Costly mistakes were made. In the mid-1960's, when the Port Authority of New York and New Jersey was adapting its facilities to containerization (the modern shipping technology of moving cargo in large containers), the City's Department of Ports and Terminals continued to invest in break-bulk piers (the traditional shipping technology that required little backup space for storing containers) along

the Manhattan waterfront: $34 million was spent on the Chelsea piers, $11 million for Pier 76, and $7.3 million for Pier 36. Since they were completed in 1968, the Chelsea piers were used for maritime purposes for only a short time and now stand vacant and vandalized. Pier 76 is a parking lot for cars impounded by the police, and Pier 36 stands vacant.

Major opportunities were lost. As maritime uses along the waterfront declined, there was great resistance to replacing them with permanent, new uses. The City pursued a policy that allowed only the least desirable, low-grade uses on the shoreline. Consequently, abandoned piers were converted to parking lots and storage facilities of every kind. Only in a few instances was the City's downgrading of pier uses halted, and then only with extraordinary effort. For example, it took the developer of the River Cafe—a highly successful waterfront restaurant located beneath the Brooklyn Bridge—13 years to get the necessary permits and approvals from the City's bureaucracy, even though the pier was not being used.

The City's waterfront was taken for granted. An unwillingness to challenge traditional ways of thinking pervaded key decisions. The waterfront suffered serious neglect, to the point where an observer approaching many parts of it today would think the nation's leading port a South Bronx-by-the-Sea.

A new set of circumstances exists today, however, that is forcing the City to reexamine its relationship to the waterfront. First, federal and state mandates require and provide funds for planning and implementing measures to clean up the City's waterways and improving management of coastal zone development. The City has received $8 million over the last 3 years under Section 208 of the Water Pollution Control Act to plan facilities to meet new water quality standards. The City has developed a $1.1 billion plan (which requires a $132 million investment of city funds) for construction and upgrading of sewage plants and sludge disposal facilities, and for monitoring water quality. Under the Coastal Zone Management Act, the City has received $263,000 to develop preliminary plans to protect, manage, develop, and restore the coastal zone. The plan will consolidate in one document policies covering every aspect of the waterfront—water quality, fish and wildlife protection, erosion and flood plains, shorefront access, recreation, solid waste disposal, energy facilities, and economic development—and provide a strategy for implementing them.

Second, the success other cities have had in reclaiming their waterfronts has sharpened local awareness of the opportunities the waterfront offers. There are many examples of successful renewal programs: the conversion of port areas to large-scale, multipurpose complexes empha-

sizing residential, commercial, and recreational, as well as traditional, port uses. The Fanueil Hall Project in Boston, the Inner Harbor Development Plan in Baltimore, and Fishermen's Wharf in San Francisco, each in its own way, have raised the expectation that New York, too, can use its waterfront well.

Third, there has been an increasing willingness to promote nontraditional uses of New York's waterfront. For many years, powerful maritime interests resisted nonshipping uses along New York's shoreline and were able to limit public investment largely to shipping-related projects. This tight control over waterfront policy began to slacken in the early 1970's with the announcement of two major projects for waterfront sites by the New York State Urban Development Corporation.

Roosevelt Island, a new town in town, is a multiuse, residential development that will include 5000 apartments, 40 acres of parkland, a shopping arcade, and ample commercial space when all its stages are completed. Stage I, which includes 2100 residential units, is complete. The buildings are designed to capitalize on spectacular waterfront views of Manhattan's East Side. The extra attraction of a tramway, which shuttles residents between the island and Manhattan, offers its passengers unique views of the waterfront. The other project, Harlem River Park Houses, is a 1,650-unit development on 6 acres of land along the Harlem River.

Both Harlem River Park Houses and stage I of the Roosevelt Island development are extremely popular and fully occupied. In addition, Waterside Plaza, a Mitchell-Lama housing project on the East Side of Manhattan between 24th and 28th Streets, has also been developed. It was the City's first waterfront project that involved construction out to the pierhead line. The development rests on a 6.1-acre deck above the water, and combines 3,000 mixed-income housing units with 3 million square feet of institutional, recreational, and retail space.

Another example of nontraditional development is Gateway National Recreation Area, the first urban national park, which was established in 1972. It includes 25,000 acres along the waterfront on the Rockaway Peninsula in Queens and on the western shore of Staten Island, as well as on Sandy Hook in New Jersey. It places under the National Parks Service wildlife preserves, natural wetlands, and 6.5 miles of beaches formerly under City care. When fully developed, the federal government will have made $300 million in improvements to these areas.

Finally, Mayor Edward I. Koch has made reclaiming the waterfront a top priority of his administration. Where in the past government has been a barrier to waterfront redevelopment, this administration has taken major initiatives that reflect a new way of thinking about the

waterfront and opened new opportunities for its redevelopment. These initiatives include:

1. The decision to commit $4 million in city capital funds to develop the South Street Seaport area as a seaport museum and a commercial center. A request for an Urban Development Action Grant has been submitted to the federal government to provide the additional funds needed to carry out the project.
2. The decision to move ahead with construction of a major convention center on underutilized rail yards on midtown Manhattan's West Side.
3. Launching a redevelopment program, after many years of broken promises, for the Red Hook area of Brooklyn. The program includes construction of a containerport, new housing, and the revitalization of a neighborhood retail strip.
4. The initiation of the City's first comprehensive waterfront inventory since 1916. It will provide sorely needed information regarding current type of development, ownership, and utilization for every parcel of land along the shoreline.
5. The decision to move ahead with the construction of Westway, which will provide 182 acres of new landfill along Manhattan's West Side.
6. The decision to support construction of the second stage of development on Roosevelt Island.
7. The decision to rethink development plans for Battery Park City, a strip of landfill that has sat vacant since 1974.

In addition, there has been a vastly increased effort to get other proposals for nontraditional land uses moving. For example, proposals for four marinas and six waterfront restaurants are currently being reviewed by city agencies.

These initiatives, however, are only a beginning. What is now needed is a comprehensive rethinking of the relationship between the waterfront and the City as a whole. The remainder of this paper begins that reassessment. The first section examines in greater detail the historical and economic forces that have changed New York City's waterfront over the past 50 years. The second describes the major new initiatives taken by the Koch administration and the new opportunities they offer. The third presents the general themes that must guide the planning of waterfront policies and projects that reflect the realities of today.

MAJOR FORCES THAT HAVE CHANGED NEW YORK'S WATERFRONT OVER THE PAST 50 YEARS

In 1928, the Regional Plan Association published a land-use survey of the City's waterfront. It reported that of the City's total shoreline—which it then calculated as 191 miles[2]—more than 60 percent was developed. Maritime and industrial uses occupied 45 miles. Of the estimated 73 miles of vacant shorefront, 19 miles were on Staten Island, which then had a population of only 67,000 compared with about 500,000 today. Queens and Brooklyn accounted for another 33 miles of vacant waterfront; however, the bulk of this land was marshland along Jamaica Bay and the north shore of Queens.

Since 1928, a number of major forces have significantly altered land use along the waterfront and in many cases severed waterfront uses from upland activities. The major forces affecting this change were (1) the basic shift in the City's economy from manufacturing to service industries; (2) fundamental changes in the shipping industry, which caused a major redistribution of maritime-related activities in the Port; (3) the construction of a modern bridge and highway system, which severely limited waterfront access; (4) expansion of public, waterfront recreational facilities beyond the City's ability to properly maintain them; and (5) location of the least desirable uses on the waterfront. Each of these factors and its impact on the waterfront are discussed below.

THE CORE OF THE CITY REPLACED THE WATERFRONT AS THE MAJOR FOCUS OF NEW DEVELOPMENT

New York's waterfront was originally the key to the City's economic growth. The City was the shipping center of a growing industrial nation. The construction of the Erie Canal opened a direct link to the interior of the country and made New York pre-eminent as supplier of goods and center of trade in the nation's westward expansion. When the nation's railroads were built, a huge rail network was cast over the Port of New York, connecting the harbor to every part of the country.

By the early 1900's much of New York's waterfront was lined with terminals, wharves, warehouses, rail yards and manufacturing plants. A 1928 Regional Plan Association study reported that by that year 45 miles of the City's waterfront were developed for industrial and shipping purposes. In Manhattan, only 4 miles of shoreline were vacant, and 16 miles—or 55 percent of the total—were used for shipping and manufacturing enterprises.

Since World War II, however, the City's economy has undergone two

fundamental changes: after continuing to expand until 1970, growth has leveled off; and the job mix has shifted from manufacturing to services. Of the City's 3.5 million jobs in 1950, one-third were in manufacturing and one-quarter were in service industries. By 1979 the total number of jobs in New York City had declined to 3.2 million (a loss of some 500,000 jobs since 1970). Manufacturing accounted for only 17 percent of the total, and service industries had grown to almost 40 percent of the local economy. The reduction in waterfront hirings was even more dramatic. In 1958 New York City piers had 3.8 million hirings; in 1978 there were fewer than 1 million.

The result of these basic economic shifts was that the focus of new development moved inland, away from the waterfront, following the growing service industries. The City became a center for corporate headquarters.

The growth of commercial space in the core of the City was phenomenal. Between 1948 and 1978 a total of 282 office buildings with 144 million square feet of floor space were constructed. In the 20-year period from 1948 to 1968 alone, 195 major new office buildings were constructed, adding 67 million square feet of office space in the City—twice the total of the combined office space in the nine next largest American cities. In the middle of the 1970's, office construction slackened considerably; however, during the past 2 years, it has begun to rise again as vacancy rates have declined.

CHANGES IN THE CARGO-SHIPPING INDUSTRY RESULTED IN A MASSIVE SHIFT OF MARITIME ACTIVITIES FROM TRADITIONAL WATERFRONT LOCATIONS

For some 60 years New York's Port handled 30 percent of the nation's foreign cargo, but this share began to diminish around 1940, and by 1973 had dropped to less than 10 percent. This decline has been attributed largely to basic economic trends beyond the City's control: certain manufacturing industries formerly concentrated in the Northeast have shifted to other areas of the country and the world; the Saint Lawrence Seaway has provided a direct deepwater route to major midwestern cities; and the present rail rates place New York at a competitive disadvantage compared to other eastern Ports such as Norfolk and Baltimore.

In spite of this comparative decline, however, the Port of New York has shown substantial growth in total tonnage over this same period—from 22 million long tons of foreign trade in 1940 to a prerecession peak

of over 75 million long tons in 1973 and 65 million long tons in 1977.

The real adverse impact on the City's waterfront has resulted from major changes in the technologies and operations of the cargo industry itself. Historically, the City's maritime commerce and related railroading, trucking, and warehousing activities developed and were concentrated on Manhattan's Hudson River shoreline, the East River, and the South Brooklyn waterfront. In 1905 767 piers lined the City's shores; more than two-thirds of them were in Manhattan and Brooklyn. Three developments in the shipping industry have had great influence on downgrading waterfront land use for maritime purposes: (1) the advent of containerization; (2) the change in the type of cargo handled in New York; and (3) the switchover from rail to truck as the major transporter of dock cargo.

Containerization revolutionized cargo loading. In traditional cargo handling, known as "break-bulk," individual packages in separate crates were loaded on and off ships. In containerization, however, cargo is prepacked in large metal boxes, each about the size of a small truck body. The first containerized cargo entered the Port of New York in the mid-1950's. Today more than 50 percent of all general cargo moving through the Port is containerized, and the implications for port land use have been significant.

Containerization speeds ship loading enormously. While it takes 12 days to load a 6,000-ton ship break-bulk style, it takes only 1 day to load the same size ship with containerized cargo. Containerization requires a different kind of port facility than was present in the City. The number of berths available became secondary in importance because a ship requires comparatively short docking time. Backup space—35 acres per berth by rule of thumb—became the essential element of a successful port facility. Enough space has to be available to store the unloaded cargo of more than one ship until it can be sorted and routed for delivery.

A related development was the increasing use of trucks to transport goods to and from ships. Construction of the interstate highway system—at the same time that the nation's rail system was deteriorating—made trucking a more attractive mode for delivering goods. Trucks were also more efficient for containerized cargo. A container of merchandise can be unloaded from the ship, placed on a truck and driven directly to the buyer. Good access to interstate highways and ample area for the queuing of trucks replaced rail spurs and rail yards as the hallmarks of a modern port.

Finally, while the volume of foreign cargo handled in the Port of New York has continued to grow, the type of cargo has shifted from predominantly general cargo (manufactured goods) to bulk cargo (high-

volume goods like oil). In 1940 only 20 percent of all cargo moved through the Port was bulk in nature; today, nearly 80 percent is bulk.

The net effect of these changes was that completely different facilities were needed if the Port was to remain competitive. New York's traditional shipping facilities—predominantly in Manhattan and Brooklyn—were ill-equipped to meet the new requirements. There was little undeveloped land available for backup space; and where land was available, it was very expensive. Access to the interstate highways was often difficult. Manhattan roads were already jammed with local traffic, and long-distance trucks could not negotiate the City's narrow streets and sharp corners.

For these, and a variety of other factors such as the resistance of the longshoremen's union to giving up the old facilities and the interstate competition inherent in Port Authority decisions, shipping activity in the Port of New York began a steady shift to the New Jersey side of the harbor. Over the past 20 years the change has been dramatic. In 1958 there were 4.8 million hirings in the Port of New York. New York City piers accounted for 72 percent and New Jersey piers for the remaining 28 percent. By 1978 total hirings in the Port had dropped to 2 million and were evenly divided between New York and New Jersey. The impact of these changes was most dramatic on Manhattan's piers where hirings fell from 37 percent of the port total in 1958 to only 5 percent in 1978.

The overall impact of these changes on waterfront land use in New York City is staggering. In 1905 some 767 piers lined the City's waterfront. By the 1970's only 168 remained; 45 of these were vacant, and only 23 were used for shipping purposes. The remaining 100 piers were in use but for nonmaritime purposes. In terms of shoreline miles, the facts are equally revealing. In 1868 Brooklyn alone had 8 miles of piers, dry docks, and supporting warehouses. The Regional Plan Association's 1928 land-use survey of the waterfront found 45 miles in use by docks and factories. By 1971 there were only 9 shore-front miles in use for maritime purposes in the entire City. Nearly 6 miles of waterfront in Manhattan and 1.6 miles in South Brooklyn—shoreline once active with shipping industries—now lay abandoned or underutilized.

CONSTRUCTION OF A MODERN BRIDGE AND HIGHWAY SYSTEM

The most visible and permanent impact on the waterfront in the last half century has resulted from building an extensive bridge, tunnel, and roadway network that crosses the City's waterways and follows much of the City's shoreline. At the turn of the century, the Brooklyn Bridge,

completed in 1883, was the only major structure spanning a New York waterway. By 1910 three major new structures spanned the East River: the Williamsburg Bridge (completed in 1903) and the Manhattan Bridge (completed in 1909), connecting Manhattan and Brooklyn; and the Queensborough Bridge (completed in 1909), connecting Manhattan and Queens. Interborough traffic was no longer dependent on the waterways. Ferries, which had flourished for nearly 60 years, attracting cargo and travelers to the water's edge, began to disappear.

Completion of the George Washington Bridge, the Lincoln Tunnel, and the Holland Tunnel—all built between 1927 and 1937—severely reduced waterborne traffic between New York and New Jersey. Of the 35 ferry lines that operated on the Hudson in 1920, only five remained in 1937. They were operated by railroad companies and linked up with Manhattan's West Side piers.

Transportation patterns were changing. In many areas of the City, the original street configurations were compatible with ferry crossings. With the ferries out of operation, many streets led to nowhere. Instead, space-consuming approaches to bridges and tunnels were beginning to clutter the waterfront.

In 1930 the first sections of the Miller (West Side) Highway were opened and marked the beginning of the era of the modern highway in the City. Elevated, grade-level, depressed, and limited-access highways began to crisscross the City. Construction of the Franklin D. Roosevelt (East Side) Drive started in 1935; the Belt Parkway (along the southern shore of Brooklyn) was started in 1936; and the first sections of the Brooklyn-Queens Expressway along the Brooklyn waterfront were under construction in 1951. The placement of these highways along the waterfront was not accidental—waterfront land was available, vacant, and underutilized.

Manufacturing and industrial uses that had lined the waterfront and deteriorated residential areas were the first victims of this effort to speed automobile and truck transportation in the City. In some projects, such as the Brooklyn-Queens Expressway, whole neighborhoods were demolished or cut in half to accommodate the highway.

In a few instances, the waterfront highways were designed to be unobtrusive, provide waterfront access, and capitalize on spectacular views. Perhaps the best examples of such design are the Brooklyn Heights promenade, built over the Brooklyn-Queens Expressway, and Carl Schurz Park, built above the FDR Drive in Manhattan. Too often, however, the highways created visual, psychological, and physical barriers to the waterfront.

Today 24 major bridges span New York City's waterways, four

tunnels carry automobile traffic beneath the City's waterways, and highways line 67 miles or nearly 30 percent of the City's shore. The impact is most severe in Manhattan where 94 percent of the waterfront is lined with major highways.

EXPANSION OF PUBLIC WATERFRONT PARKS AND BEACHES OUTPACED THE CITY'S CAPACITY TO MAINTAIN THEM

In 1928 the Regional Plan Association reported that about 16 percent of New York's waterfront was designated for recreational use. In reality, little of it was much more than vacant land. Over the next 50 years, however, the City developed an extensive and diverse system of public waterfront parks and beaches.

There are now nearly 60 waterfront parks, covering 84 miles or nearly 40 percent of shoreline and including 18 miles of beaches. They are of diverse types: strip parks or vest-pocket parks that serve a particular neighborhood; large parks that serve the borough or the region; beaches that serve the whole City; and historic sites. The facilities available are extensive, including playgrounds, boardwalks, bicycle paths, tennis courts and sports fields, swimming, fishing, and boating.

The facilities are popular. Coney Island attracts 22 million visitors a year, and on peak days 1 million visitors use its beaches. Maintaining this extensive, heavily used network of recreation facilities in safe and sound condition is costly. In addition to ordinary maintenance, experts estimate that an acre of parkland requires major rehabilitation—new top soil, tree planting, renovated structures—every 25 years. Parks professionals estimate that, on average, it costs $125,000 per acre to rehabilitate parkland.

The City's parks have not received this level of reinvestment, and waterfront parks and beaches are showing signs of serious neglect. For example:

- The promenade and retaining wall at Brooklyn's Shore Park, near the Verrazano Bridge, needs major repair. As a result of severe storms, the wall is crumbling and sections have fallen into the bay. In some spots, conditions are dangerous, and the nearby community is greatly concerned.
- The 1.5-mile boardwalk along South Beach in Staten Island is no longer usable. It is dangerous, a fire hazard, and would cost several million dollars to repair or replace.
- The marina at 79th Street on the Hudson River accommodates about 100 boats. Its piers and floats are decaying, and major rehabilita-

tion and replacement are required at a cost estimated at over $1 million. The water around the marina needs dredging because there is not sufficient depth for boats to maneuver at low tide. These repairs would be extremely costly.

- The boardwalk, playgrounds, playing fields, and picnic areas at Coney Island are in a serious state of disrepair.
- Broken benches, vandalized and burned-out lavatory facilities and maintenance sheds, and landscape erosion mar many other waterfront parks.

Unsafe water quality poses a special problem in maintaining public beaches for swimming. Since about 1910, the quality of water surrounding New York City has been declining. Today high bacteria counts often force the closing of beaches throughout the City. Signs prohibiting swimming are usually posted at Silver Beach, Canarsie Beach, Conference House Park, and the Bergen Beach area.

The problems that plague the City's waterfront parks are only a part of the overall crisis that grips the City's entire park system. Parks and recreation facilities represent the City's largest real estate holding. They include 1,400 facilities covering some 25,000 acres of land: 572 parks; 900 playgrounds; 350 malls, squares, and triangles; 104 indoor and outdoor swimming pools; 890 playing fields; 535 tennis courts; 13 golf courses; 7 ice-skating rinks; 6 beaches; and 3 major zoos.

Since 1968 the City's Parks Department, which must maintain and operate not only the waterfront facilities but all city recreation programs, has suffered a 50-percent cutback in permanent personnel. The department lost 3,000 full-time civil service employees. Capital investment in the City's parks is perhaps the most revealing indicator of the extent of neglect. To meet the standards of maintenance recommended by parks experts, 1,000 acres of parkland should be renovated each year. That would require a capital outlay of $125 million. In 1978, however, the total capital investment in city park facilities was only $25 million.

THE LEAST DESIRABLE USES WERE LOCATED ON THE WATERFRONT

The Regional Plan Association's 1928 report listed nearly 40 percent of the City's waterfront as undeveloped. By the 1970's the figure was down to less than 5 percent.

As discussed earlier, between these years there was a massive expansion and development of recreational facilities and parks along the waterfront: from 16 percent of the shoreline in 1928 to 38 percent in

1971. At the same time, Port facilities and related industrial and warehousing functions were moving to other parts of the region. Residential use actually declined along the shorefront—from nearly 20 percent in 1928 to only 13 percent in 1971. This was due primarily to the disappearance of summer bungalow communities from sections of the Bronx, Brooklyn, Queens, and Staten Island.

For the most part, the new uses that developed on the waterfront during the past 50 years were facilities necessary for providing essential services to the expanding city population. The most land-intensive of such facilities were the City's two major airports: LaGuardia, which covers 575 acres of land and occupies over 4 miles of Queens waterfront along the upper East River, Bowery Bay, and Flushing Bay; and John F. Kennedy, which covers 4,900 acres of land and fronts on 7 miles of shoreline along Jamaica Bay.

Consolidated Edison, the City's supplier of electrical power, found the waterfront a convenient location for its power generating equipment. All 11 of its steam turbine electric generating plants and all nine of its gas turbine plants within the City are on the waterfront.

The City's residents and industries discharge nearly 1.3 million gallons of raw sewage and 26,000 tons of refuse and construction wastes each day. A vast capital plant had to be developed to process this extraordinary volume of waste matter. Between 1935 and 1967 13 water pollution control plants were constructed at waterfront sites. Twelve are still in operation and two new plants are under construction.

To handle solid waste, nine landfill areas were designated along the waterfront. Over the past 30 years, more than 5,400 acres of waterfront area have been filled with refuse. Today, seven landfills remain active, receiving about 17,000 tons of solid waste per day. Most of the refuse is transported to the landfills by barge. This has necessitated the construction of 10 marine transfer stations on the shoreline to move the materials from sanitation trucks to barges. Finally, of the City's six refuse incinerators, four are on the waterfront.

No one would argue that these facilities are not essential to the City. In fact, their placement on the waterfront often made good economic and planning sense. For example, at the time the City had to develop an airport to remain competitive with other cities, the waterfront of outer Queens was one of the few available sites within the city limits that had a sufficient amount of cleared land area for the necessary ground facilities and runway approaches. When waste-processing facilities were sited, the waterfront was chosen because it offered inexpensive, often secluded locations for such unaesthetic functions. Now that the land around these facilities has been developed, however, their impact on newer, adjacent

uses is often devastating. They have become barriers to large sections of the waterfront and have cut off the upland from the shore.

MAJOR NEW INITIATIVES TO REDEVELOP NEW YORK'S WATERFRONT

The enthusiasm and excitement aroused by the Operation Sail July 4th festivities in 1976, coupled with other events, have brought about a new attitude toward reclaiming the waterfront. During that July 4th celebration, cruise ships were booked to capacity, and millions of spectators were drawn to the waterfront to watch a parade of sailing ships and a spectacular harbor fireworks display. The Koch administration has made it a top priority to take advantage of this new spirit and the opportunities it presents. In its first year in office, it has challenged the traditional ways of thinking about waterfront development.

In addition to continuing ongoing efforts such as the Coastal Zone Management Program and the 208 Water Quality program, the City has undertaken major new initiatives which offer great potential for reclaiming the waterfront.

SOUTH STREET SEAPORT

The South Street Seaport is a 10-block area extending along the East River waterfront in lower Manhattan, from Burling Slip to the Brooklyn Bridge, between Pearl Street and the river. It is the last vestige of the 19th century port that made New York a world shipping center. It is also an enclave of small-scale historic buildings that stand adjacent to the high-density office towers of lower Manhattan. In recognition of its historic character, the Seaport has been designated a historic district and is listed on the National Register of Historic Places.

Proposals for the redevelopment of the Seaport have been part of the City's plans for lower Manhattan since 1965; financing has always been the major obstacle to making these plans a reality. The current proposal is similar in concept to the Faneuil Hall marketplace project in Boston. It has three elements: consolidation and improvement of the historic Fulton Fish Market, creation of a retail and restaurant complex, and related pier and infrastructure improvements.

Last summer, Mayor Koch committed $4 million in city capital funds for the Seaport project, and submitted the proposal to the federal government for an $8 million Urban Development Action Grant. When completed, the project is expected to create 550 new jobs and draw millions of visitors to a restored lower Manhattan waterfront.

CONVENTION CENTER

For years the City debated whether or not to build a convention facility, what its size should be, and where it should be located. In April 1978 Mayor Koch committed his administration to constructing a 750,000-square-foot facility at 34th Street on the west side of midtown Manhattan. The facility wil be built on a 25-acre site of the underutilized Penn Central railroad yards. The New York State legislature recently approved a plan that authorizes a newly created subsidiary of the New York State Urban Development Corporation to finance and develop the facility. The addition of a convention center to the west side waterfront—joining the superliner terminal and docks for the Circle Line and day cruise tourist boats—makes this part of the waterfront an ideal place for additional commercial and tourist-oriented development.

REDEVELOPMENT OF RED HOOK, BROOKLYN

Since 1963 the residents of Red Hook have been promised that a containerport would be constructed to replace the deteriorating piers along the South Brooklyn waterfront. Urban renewal plans were drawn and properties were condemned, but little other action followed. In 1975, the final blow was struck: during construction of an interceptor sewer along Columbia Street, building foundations shifted and one building collapsed. In response to the residents' fear that other structures would fall, sewer construction was halted. For 3 years, the neighborhood was marred by an open trench on President Street. Businesses closed and many lifelong residents moved from the neighborhood.

In July 1978 Mayor Koch announced an action program for the South Brooklyn waterfront and Columbia Street. The plan merges old and new waterfront uses. It includes the construction of 160 units of low-rise, owner-occupied housing; designation of federal "312" Rehabilitation Loan status for the area to allow the remaining homeowners to improve their properties; the construction of a two-berth, 75-acre containerport by the Port Authority; and a two-phased commercial revitalization program for Union Street, the local retail street. Unlike past proposals, the City, state, and Port Authority allocated funds to immediately start the project. Today, construction of the containerport is proceeding and urban renewal plans for acquiring property for the new housing are before the City Planning Commission for review.

WATERFRONT INVENTORY

Not since 1916 has the City of New York had a complete inventory of all waterfront property. In December 1978 the Department of Ports and Terminals and the Department of City Planning began a joint effort to compile information on the physical features of waterfront land and structures. The survey will gather social, economic, legal, and financial data pertaining to the waterfront that are essential for development decisions.

The increasing demand for waterfront properties for non-maritime use has made the availability of hard data on the coastal sites a necessity for economic development decisions. The findings of the study will aid private developers as well as governmental agencies. Specifically, the inventory will allow its users to:

- Assess the type and condition of current uses on the waterfront.
- Determine the infrastructure available for waterfront sites.
- Make accessible the most current data for analyzing the impact of proposed projects, identifying short- and long-term trends, and formulating development and environmental protection strategies.

WESTWAY

This $1.4 billion project represents an important opportunity to make a significant impact on the City's waterfront. Covering 4.5 miles of waterfront along the west side of Manhattan, the project would remove the abandoned piers in its path, add 182 acres of landfill, and remove the elevated structure of the original West Side Highway, a major obstacle to waterfront access. As part of the agreement between the state and City to move the Westway plan forward, the City will have land-use control of the project site, and the state has agreed to develop and operate a 97-acre park on the landfill.

The highway will be almost completely depressed and covered. Thirty-five acres of landfill will be available for residential construction, 97 acres for parkland, and 50 acres for commercial and industrial uses. Manhattan's West Side communities—Chelsea, West Village, SoHo, and Tribeca—will gain unprecedented waterfront access.

SECOND STAGE OF ROOSEVELT ISLAND

The construction of a new town in town on Roosevelt Island, in the East River in the narrow area between midtown Manhattan and Queens, has

been perhaps the greatest single success of recent waterfront development in New York. Its 2,100 apartments, 80,000 square feet of commercial space, traffic-free main street, and experimental schools have made it one of the most popular, economically integrated, family communities in the City.

The second stage of construction calls for 1,000 additional housing units, a parking garage, and additional parkland. Essential to securing the financing for the housing was the need to provide another school on the island. This past winter, the Koch administration committed funds to build the school, and construction is expected to be underway soon.

RETHINKING BATTERY PARK CITY

This project, conceived during the construction boom of the 1960's, illustrates the difficulty of accomplishing large-scale waterfront development. As originally planned, it called for 90 acres of landfill on which 15,000 housing units and 5 million square feet of office and retail space would be built. Today only the landfill is completed; the only use is a temporary heliport serving lower Manhattan. A plan for 1,600 housing units has been delayed by difficulties securing financing.

In an attempt to take advantage of the opportunities presented by this large vacant area, the Koch administration has agreed to rethink the original development plan. In the 10 years that have passed since the Battery Park City plan was adopted, market forces in lower Manhattan have changed significantly. The impact of the World Trade Center complex, which is adjacent to the Battery Park site, has created intense pressures for office development in the Liberty Street area. The original plan for Battery Park City calls for open space, not office space, in that area. In addition, the marketability of high-rise, luxury housing, which is proposed in the plan, has come into question. It may well be that a lower density, lower profile development will prove more desirable and more marketable.

By re-examining the development strategies for this invaluable tract of waterfront land, the City hopes to stimulate private investor interest in construction.

PLANNING FOR THE WATERFRONT

In addition to the major new public initiatives underway, private investors have expressed interest in developing a number of large, underutilized, or vacant waterfront sites. For example:

- A major housing and recreational project has been proposed for the Conrail 60th Street yards on the west side of Manhattan. The community board is now studying the impact of the proposal and identifying ways to maximize waterfront access. Also under study are means of tying the development to plans that are in preparation to renovate the 79th boat basin.
- The Port Authority of New York and New Jersey is considering redeveloping the Harlem River railroad yards into an industrial park with a resource recovery plant. This 100-acre waterfront site has excellent access by truck. It is near the Major Deegan Expressway and Bruckner Boulevard, and can also be reached by ship from the East River, its eastern border.
- College Point in Queens offers an attractive vacant site for new housing. This 23-acre landfill area is surrounded by residential development. It has direct access to the East River on its western boundary and is accessible from Powell's Cove Boulevard, a major east-west thoroughfare, on its southern boundary.
- Erie Basin in Brooklyn, once a thriving part of the South Brooklyn waterfront during the heyday of Brooklyn shipping activities, now stands largely vacant and underutilized. It has a commanding view of New York harbor, the Statue of Liberty, and the Verrazano Bridge. Housing has been proposed for the site. The basin itself, a well-protected body of water, has been mentioned as an ideal site for a marina.
- In addition, proposals for at least four new marinas and six waterfront restaurants have been submitted for various locations along the shoreline.

In evaluating these and other waterfront proposals, the challenge is to find ways to shape and guide development in directions consistent with the current realities of the waterfront and of the City. The key is to find ways to reconnect waterfront activities with mainland activities. This does not rule out restoring traditional uses; it does require finding ways to reinforce those uses and bring new activities to the underdeveloped and underutilized parts of the waterfront.

In planning the reclamation of the waterfront, there are certain basic themes that should guide the City's efforts.

BUILD FROM STRENGTH

To build from strength means identifying and earmarking those sections of the waterfront that are sound. In developing strategies for the waterfront it is essential that areas of strength—economic, social, or

topographical—become the cornerstones of redevelopment. This means that at a time when manufacturing jobs are declining in the City, and shipping activities are centered in New Jersey, there is limited need for industrial and maritime-related uses on the waterfront. The real opportunities will stem from growth in tourist-related facilities, commercial fishing possibilities that arise from the extension of the national waterline to 200 miles offshore, and oil drilling on the outer continental shelf in the Atlantic—should that produce positive results. In addition, a strong emphasis should be placed on the aesthetic quality of the waterfront for residential and recreational uses. The key criterion for major public investment in waterfront development should be the project's longevity and durability as a component of New York City.

RECOGNIZE THAT THERE ARE LIMITS TO WHAT CITY GOVERNMENT CAN ACCOMPLISH

Plans must be realistic in what they can be expected to accomplish. An unfortunate example of unrealistic expectations is Coney Island. Fifty years ago, that marvelous area of the City—3.2 miles of beach, a sprawling boardwalk, and an amusement and recreation facility—was a kind of Riviera. By the 1960's, however, the area adjacent to the beach had deteriorated as a result of changing social and economic forces. In an attempt to reverse the decline, the City undertook a massive redevelopment effort that depended almost exclusively on building new housing.

Over the past 10 years, the City has spent more than $200 million in this effort; but this massive investment has failed dismally. Coney Island has become a slum even more depressing than many parts of central Harlem or central Brooklyn. What must be reflected in any strategy for the waterfront is that certain forces are beyond the control of government. Plans must attempt to shape and mold those forces rather than to attempt to reverse them totally.

STREAMLINE THE POLICY-MAKING PROCESS

Waterfront planning and development have been hampered by a maze of overlapping and competing governmental jurisdictions that blur lines of responsibility and accountability and unduly lengthen project approval processes. Five interstate agencies, four regional authorities, 16 city agencies, three commissions, two locally elected bodies, 15 community boards, and five borough boards have some jurisdiction over waterfront

development. Some 74 different permits are issued by these offices for various waterfront activities.

The results of these overlapping, and sometimes conflicting, responsibilities have been costly mistakes, the loss of many important opportunities for development, and a general pattern of neglect. Unless decision making is expedited and clear lines of accountability drawn, the full potential of the waterfront will not be realized.

PLAN FOR BOTH SHORT-TERM AND LONG-TERM USES OF WATERFRONT SITES

The entire waterfront cannot be redeveloped at once. New York City's shoreline is very extensive—578 miles in all—with hundreds of different uses. Major redevelopment requires long lead time: sites must be assembled, designs drawn and approved, and construction undertaken. In the interim, individual parcels of vacant or underutilized land should be made available for short-term recreational or commercial use. For example, the Jane Street Pier in Greenwich Village became a popular neighborhood promenade when it was simply opened to the public as a vest-pocket park. Another example is the Wall Street Racquet Club which leased two piers on the east side of Manhattan and constructed indoor tennis courts. Such uses can quickly convert underutilized and vacant space into waterfront activities that attract people and bring revenues to the City.

SPIN-OFF RESPONSIBILITIES TO OTHER LEVELS OF GOVERNMENT OR PRIVATE ENTERPRISE

The City has overbuilt its public park facilities to the extent that it can no longer maintain them adequately. Given the City's limited financial resources, it is unlikely that the City can by itself bring back these priceless recreational facilities to adequate condition.

Opportunities to spin-off the responsibility to other levels of government may be the best way to handle such properties. Gateway National Park is a prime example of the benefits of this approach. Jacob Riis Park, which had fallen into a state of serious neglect under city ownership, is now part of Gateway National Park. The federal government will make $300 million in improvements in Gateway over the next 10 years. The state and federal governments should be urged to take over facilities that are consistent with their responsibilities within their jurisdictions. In some cases, community groups or other private interests may be able to maintain or service facilities placed under their control. Legal and

administrative mechanisms should be developed for this kind of transfer of responsibility.

WORK WITH COMMUNITY BOARDS

In 1975 a revised Charter that vastly increased the planning role of the City's 59 Community Boards was adopted. Fifteen of the boards have waterfront property within their boundaries. Their full participation in waterfront planning must be assured. The advantages of their participation are many. Most waterfront property is bordered by fully developed land; the active involvement of boards in the planning process will help ensure that new development is compatible with existing uses and will expedite the land-use review process in which boards have a formal role. Board members should be encouraged to join other community leaders and city officials on task forces to review waterfront plans and projects. When large-scale development is involved, private foundation grants should be sought to enable communities to hire experts to assist them in evaluating the proposals.

SPREAD DEVELOPMENT INTEREST TO OUTER BOROUGHS

Most of the renewed interest in the City's waterfront has focused on Manhattan's shoreline. Many opportunities exist in the other four boroughs which should be tapped. Development there will have a different focus than in Manhattan. Potential residential sites should be identified, as well as sites appropriate for providing waterfront access from existing neighborhoods to private recreational activities such as marinas.

TO CONCLUDE

The challenge of reclaiming New York's waterfront is a difficult one. The City's shoreline is both extensive and varied; significant impact cannot be achieved through a single project, as is possible in other cities. The waterfront must be viewed as a mosaic, made up of a variety of elements, each of which exists by its own character and strengths and yet are united by their strong ties to the heart of the City.

NOTES

1. Employment figures for dock workers are measured in hirings. Each hiring represents one 9-hour day worked by one longshoreman.

2. This figure ignores the unevenness of the shoreline and does not include the numerous smaller islands such as Roosevelt, Governor's, and Randall's, which are also part of New York City. The total New York City shoreline, ignoring unevenness and including all islands, measures 236 miles, and this measurement is the basis for the current land-use figures reported. (Including unevenness, the shoreline measures 578 miles.)

San Francisco Bay: Mystique Versus Economics

HAROLD GILLIAM
San Francisco Chronicle

INTRODUCTION

San Francisco Bay occupies a Coast Range valley that was slowly inundated at the end of the last Ice Age, when rising sea level caused the ocean to enter the river-carved gorge now known as the Golden Gate. The bay is about 50 miles long and 12 miles across at its greatest width. For the purposes of this paper the bay is defined as San Francisco Bay proper and San Pablo Bay to the north, eliminating tributary estuaries, such as Suisun Bay, and rivers, such as the Sacramento and San Joaquin, whose waters merge in a large delta between Sacramento and Stockton before flowing into San Pablo Bay at Carquinez Strait.

As late as 130 years ago, the bay's approximately 300 miles of shoreline were still in a natural state. Currently, all stages and types of shoreline development are visible, including wildlife marshes, ports, salt works and other industrial uses, marinas, and airports. The shores are bordered by nine counties and 32 cities. Until recently, each jurisdiction had its own plans or nonplans for shoreline development, unrelated to any regional interest in the bay as a whole.

As a result there were chaotic and conflicting uses of the bay and shoreline until the advent of the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. BCDC was evidently the first agency in the U.S. specifically established to assume authority over a major coastal resource that overlapped multiple jurisdictions.

The conflicts over waterfront uses have not disappeared. If anything

they are more publicly apparent now as a result of BCDC's restrictions on local interests in favor of the regional interest. But the commission has attempted, with a large degree of success, to compromise conflicts and create a growing awareness of the public interest of the bay as a whole. Consequently, in terms of innovative waterfront land use, the 14 years since the creation of BCDC have been the most significant period in the 130-year history of shoreline development. These years have also marked a major change in the relative positions of the bay's two major Ports, San Francisco and Oakland. Before looking more closely at this period, we will examine the historic background of the bay's principal urban waterfront areas.

THE PORT OF SAN FRANCISCO

One of the most important factors in recent waterfront land-use conflicts in the City of San Francisco, as well as in other local urban waterfronts, has been an unquantifiable influence that might be called the mystique of San Francisco Bay. That influence began with the 18th-century Spanish explorers who saw the high promise of this bay as the great Pacific Coast harbor for which they had been searching. In 1769, Father Juan Crespi, who was present at the discovery of the bay by Portolá, wrote: "It is a harbor such that not only the navy of our most Catholic Majesty but those of all Europe could take shelter in it."

In 1776 Father Pedro Font recorded the excitement felt by explorer Juan Bautista de Anza and his men standing at the Golden Gate:

> The port of San Francisco is a marvel of nature, and might well be called the harbor of harbors. . . . Although in all my travels I saw very good sites and beautiful country, I saw none which pleased me as much as this. And I think that if it could be well settled like Europe, there would not be anything more beautiful . . . for it has all the convenience desired, by land as well as by sea, with that harbor so remarkable and so spacious that in it may be established shipyards, docks, and anything that may be wished.

In 1835, during his 2 years before the mast, Richard Henry Dana wrote: "We sailed down this magnificent bay with a light wind. . . . If California ever becomes a prosperous country this bay will be the center of its prosperity . . . the best anchoring-grounds in the whole western coast of America."

In 1846 explorer John C. Fremont stood at the entrance to the bay and was gripped by a vision of its possibilities as a center of Pacific commerce. The strait reminded him of the ancient harbor of Byzantium at the crossroads between Europe and Asia. "I gave (it) the name

Chrysopylae, or Golden Gate, for the same reason that the harbor of Byzantium was called Chrysoceras or Golden Horn."

The name turned out to be prophetic; within a few years hundreds of ships sailed through the strait with Argonauts in search of literal gold, and the Gate became a worldwide symbol of fortune.

Aside from some improvised landing facilities at the old Spanish Presidio overlooking the Golden Gate, the first harbor was in sheltered Yerba Buena Cove near the northeast corner of the San Francisco Peninsula. The crews of dozens of ships simply abandoned their vessels there and took off for the mother lode, and some of the ships were taken over as municipal buildings. The gold rush sent the value of waterfront lots skyrocketing, but owners of those lots soon ran into difficulties. A free-wheeling state legislature raised funds by drawing up a new waterfront line offshore. The bay bottom inside the line was given to San Francisco on the condition that the City would kick back to the state 24% of the revenue from the sale of that land. The new owners filled their property, converting it to dry land, and were for a short time owners of extremely high-priced waterfront lots—until they were left high and dry when the legislature 2 years later decided to repeat the process and established a new waterfront bayward of the old one.

The chaos over waterfront control reached such proportions that the state in 1863 took over the harbor under a State Board of Harbor Commissioners. In 1887 a 12,000-foot seawall was completed from Fisherman's Wharf on the north to the China Basin Channel on the south. Finger piers were built along the wall, and the shoreline areas were occupied by warehouses, railroad switch yards, and other shipping facilities. Meantime, the mystique of San Francisco Bay was growing. Generations of San Franciscans developed a deeply nostalgic feeling for the bay as they looked out across the water from the hills of the City, watched the ships sail through the Gate and move to the docks below, observed the changing lights and colors of the surface, inhaled the salt air, heard the whistles of ships and fog horns, and sailed the bay in pleasure boats or on the ferries that carried tens of thousands of commuters daily. Over the years that mystique has become a determinant of waterfront land use as potent as any economic factor.

The mystique of the bay had a strong political effect in the 1960's when state engineers constructed an overhead two-level freeway along the waterfront from the south, crossing the face of the famed Ferry Building at the foot of Market Street. Public indignation ran high at this "Chinese wall" along the waterfront. In a well-organized grass-roots revolt, voters figuratively stormed the City Hall and forced the Board of Supervisors to veto all further freeway plans. The Embarcadero Freeway

was left unfinished, with stub ends at mid-waterfront, and was never extended all the way along the waterfront to the Golden Gate Bridge, as had been originally planned. To do so would have similarly walled off from the bay such areas as the foot of Telegraph Hill, Fisherman's Wharf, the area that became a very popular and well-landscaped complex at Ghirardelli Square, the City's Aquatic Park, and the Marina Green, a bayside park that offered one of the few public access points to the water.

It is worth noting that in halting the Embarcadero Freeway (and another route through Golden Gate Park), the City forfeited $280 million in federal highway funds. But an open waterfront, it seemed, was worth far more.

Meantime, owing to competition and other factors that will be considered below, shipping to the Port of San Francisco was steadily declining, from a postwar high of 7.8 million tons in 1947 to 5.2 million tons in 1964, the year of the freeway revolt. (By 1977 it was down to 2.3 million tons.) Consequently, some of the City's old finger piers were falling into disuse, and there were numerous suggestions about what to do with them.

The City, dissatisfied with the state's management of the Port, requested that it be returned to municipal ownership, and in 1969 the legislature did so. After 106 years of state operation, the Port again became the property of the City of San Francisco, along with its assets and liabilities, including decrepit piers and a substantial indebtedness.

A major step toward a change in San Francisco's waterfront and near-waterfront land use had begun in the 1960's when a federally financed redevelopment program cleared away the City's old produce market, off the Embarcadero, and adjacent obsolete structures, and replaced them with the Golden Gateway Project—a large complex of high-rise residential and office buildings with commercial shops and malls on the lower levels. Two park areas were included, one opposite the Ferry Building, but neither opened directly onto the bay, because the Embarcadero roadway and the freeway above it interfered and no plan had been worked out to replace the old piers.

Not all of the piers were obsolete. Recognizing the need for more space for movement of cargoes, particularly truck turnaround areas, the Port had combined two pairs of piers (Piers 15 and 17 and Piers 27 and 29) by joining them like Siamese twins to provide the needed space. Passenger ships continued to come into Pier 35 at the foot of Telegraph Hill.

For many decades the area between the foot of the historic hill and the seawall—a curving strip about 200 yards wide—had been a mixture of

residential, industrial, and shipping-related uses. Residents of the hill were fond of looking out on not only the bay but the shipping activity along the docks, the busy Belt Line Railroad serving the piers, the warehouse activity, the industrial operations, and the traffic of the waterfront roadway. Hill residents were high above the battle, so to speak, and the commercial-industrial activity below was considered a picturesque part of the total scene of the bay and its shores.

However, as land prices rose in the 1960's, the land between the hill and the bay became too expensive to support such activities, and some major investors planned to build in one area a complex of buildings called the International Market Center. Although the height was to be limited to about 80 feet, and spaces were to be left between some of the buildings as view corridors, Telegraph Hill residents and their sympathizers throughout the City protested the effect on views from the hill (widely used for sightseeing by visitors). As a result of the protest and financial problems, the project was abandoned. In the past decade the area has been changed gradually from warehousing to low-rise office, commercial, and residential uses that block few views. The mystique of the bay had prevailed again.

The year after the waterfront reverted to the City, two large-scale private proposals were made for the Ferry Building area to replace the decaying piers. One was Ferry Port Plaza, a plan by Oceanic Properties for a 10-acre fill on pilings, including an expansive eight-story structure with office space, retail stores, a 1200-room hotel, and parking for some 2,000 cars. The other was a proposal by U.S. Steel for a 10-acre fill on pilings, supporting a 40-story office building, a 26-story hotel, and some smaller buildings. Existing zoning prohibited high-rise buildings along the waterfront, and activist San Franciscans were determined to protect their views of the bay from any such "blockbuster." The height of the tower would approach that of the towers of the nearby Bay Bridge.

Port officials and the Chamber of Commerce were convinced that the proposed construction would be an economic boon to the City, but once again the mystique of the bay asserted itself. There was another grass-roots "revolt" with street demonstrations and noisy crowds at the City Hall. The Board of Supervisors gave careful ear to the protests and refused to stretch height limits to accommodate the U.S. Steel tower.

By this time the San Francisco Bay Conservation and Development Commission was in the picture. (Its genesis and operation will be described below.) BCDC consulted the State Attorney General's office and confirmed that many of the uses proposed in the plan by Oceanic were not "water-related" uses as defined in the Bay Plan, which prohibits filling for purposes that do not require water access. So the commission

denied the permit. Once again, San Francisco's love for the bay outweighed economic arguments in determining waterfront land use.

After more than a century in which San Francisco's waterfront area grew spontaneously with very little planning, during the past decade there has been a confusing plethora of plans, counterplans, and amended plans by the various authorities with jurisdiction over the waterfront. The City of San Francisco prepared a Northern Waterfront Plan, which was adopted in 1969, the same year that BCDC's San Francisco Bay Plan, including the entire bay, was adopted. At the same time the Port and the Redevelopment Agency, which controlled extensive upland property, had plans of their own.

In 1971 the City Planning Commission and the Port Commission presented revised waterfront plans, and a separate analysis was presented by the Citizens Waterfront Advisory Committee created by BCDC to help make BCDC's own specific plan for the waterfront. In 1975 BCDC's "Special Area Plan—San Francisco Waterfront" indicated that there should be no fill to replace old piers without BCDC approval. This provision and others conflicted with the City's Northern Waterfront Plan, so both the City Planning Commission and BCDC worked to coordinate their planning, assisted this time by still another citizens' committee called the Northern Waterfront Planning Advisory Committee. In January 1977 the two plans were reconciled. Both provided for expansion of maritime uses, commercial, recreation, and public access, traffic improvement, and historic preservation.

Narrowing down the focus, the San Francisco Supervisors provided for a Northeastern Waterfront Survey to look at each piece of property in detail and formulate an action plan, including cost estimates. The survey was a joint project of three agencies, the City Planning Department, the Redevelopment Agency, and the Port of San Francisco, assisted by yet another citizens' committee, the Northeastern Waterfront Advisory Committee. In February 1979 the survey published a preliminary report that reflected certain unresolved controversies. The agreed policy for this section of the waterfront was to retain for maritime use all usable existing facilities, but the disagreement arose as to what should be done with the old finger piers and adjacent structures when they became obsolete. One argument was to rebuild them for conventional break-bulk cargoes; the other was to use the area for other public and commercial purposes, such as marinas, and concentrate shipping on the southern waterfront, where there were more usable spaces and fewer problems with conflicting automobile and train traffic. Among those who favored rebuilding the old piers for maritime uses on the northern waterfront, one of the considerations was the mystique of the bay. Particularly

important was an old San Francisco tradition—ships loading and unloading within sight of residential and public-use areas—even though strictly economic calculations might dictate otherwise.

Another controversy concerned an upland site to be made available by rerouting the Embarcadero roadway and railroad slightly inland. One argument was to use the entire area as public-access open space; the other was to use 40% of the area for a hotel complex to earn funds to help pay for the open space. In both controversies, as so often in the past, economic considerations were up against the mystique of the bay.

A third controversy involved no less momentous a project than the removal of the unloved Embarcadero Freeway, which blocks views of the bay. The sentiment for removing it seemed to be preponderant—if federal funds were to become available.

Here, too, the mystique of the bay was in contention with "practical" considerations.

THE PORT OF OAKLAND

Looking at a map of the San Francisco Bay Area, one may find it curious that the biggest dry-cargo Port on the bay for a century was San Francisco, on a constricted peninsula, rather than Oakland, on the mainland terminus of the transcontinental railroad since 1869. The answer seems to be that San Francisco simply was there first. It was a major city when Oakland as a village, and Southern Pacific (originally Central Pacific) officials put their railroad cars on ferries and shipped them across the bay. Southern Pacific owned most of the Oakland waterfront and showed little interest in developing it, except as a base for a long wharf that carried the rail lines out to the ferries. Nevertheless, by 1910, Oakland's limited harbor facilities handled about 20 percent of the total dry-cargo ship tonnage passing through the Golden Gate. The prospect of a boom in shipping from the opening of the Panama Canal in 1914 stimulated Oakland to put more effort into its Port. The City finally acquired control of most of its waterfront in 1911 and about the same time voted $2.5 million for harbor improvements in the Oakland Estuary, the tidal mouth of Alameda Creek, separating Oakland from the island of Alameda, a separate municipality. But Oakland still implicitly admitted its subordination to San Francisco by spending much of the bond issue on improvements facilitating ferry service across the bay.

It was not until the 1920's that creation of a Board of Port Commisioners and a $10 million bond issue stepped up the development of the Port of Oakland with new facilities both in the estuary, or inner harbor, and the bay front, or outer harbor. In 1929 the State Railroad

Commission ordered the end of discriminatory freight rate structures against Oakland, and the U.S. Treasury Department made it a full port of entry with its own customs service.

Another situation that favored the development of the Port of Oakland was the shoreside cargo congestion at San Francisco's piers along the Embarcadero. San Francisco's shipping tonnage doubled during the 1920's and had a value in 1929 of $1.6 billion. The piers along the Embarcadero were operating at capacity, and the spillover went to Oakland. Another shipping boom occurred during World War II, and again Oakland benefitted from San Francisco's congestion.

As we have noted, San Francisco's tonnage began to decline in the postwar years from a high peacetime point of 8 million tons in 1947. Oakland's more modern facilities and its position as a continental railhead proved more attractive to many carriers than San Francisco's older piers and circuitous railroad connections. San Francisco was suffering not only from an obsolescent plant but from lack of space on its crowded, hilly peninsula. The space situation became particularly acute with the development of containerization, which requires at least 20 to 30 acres of level land per berth.

For geological reasons, the bay on the Oakland side was much shallower and more susceptible to filling than the deep water off San Francisco. The expanding Port of Oakland benefitted from another windfall in the 1960's and 1970's when the Bay Area Rapid Transit tube was built across the bay, and spoil from the excavation became available for filling. In upland areas between the rail lines and the waterfront, old sheds, warehouses, and industrial buildings were removed to create space for containerized cargoes. The long finger of bay fill known as the Southern Pacific Mole, the old ferryboat terminal, became the nucleus for a large new fill area accommodating expanded cargo facilities, known as the Seventh Street Terminal. Bounding the estuary or inner harbor on the south is the island city of Alameda, which participated in the expansion of harbor facilities.

One reason for conversion of land and the creation of fill for harbor purposes was the unmeasurable factor of civic pride. Oaklanders were sensitive to taunts about their cultural inferiority, summed up in the often-quoted remark of native Oaklander Gertrude Stein, looking back from Paris: "There's no there there." In the postwar decades, Oakland began to see the possibility of emerging from the shadow of San Francisco.

In the 1960's and 1970's Oakland's park system was greatly improved, and flowers began to blossom along streets. A new Oakland Museum was built on Lake Merritt, with a widely praised architectural design; it

featured California painting, history, and ecology. The Oakland symphony moved into a renovated movie palace, the Paramount Theater; and a large new sports complex, including the Coliseum, brought big-league baseball and other sports. The port expansion was the economic counterpart of the cultural boom in a city that was beginning to discover its own identity.

The mystique of the bay, which figures prominently in the land-use picture on San Francisco's waterfront, is not absent in Oakland, but it takes different forms. The East Bay littoral is several miles wide between the bay and the foot of the Berkeley Hills. Oaklanders who live in the hills treasure their view of the bay, but it is a distant prospect that is not directly affected by activities along the waterfront. There are none of the kind of waterfront and upland residential areas that are found on the hills of San Francisco.

Consequently, the bay is not such an immediate experience or vital issue as it is in San Francisco. Nevertheless, in planning its harbor expansion, Oakland provided an attractive restaurant, shop, marina, and park complex on the waterfront at the foot of Broadway, named for its most famous native (aside from Gertrude Stein), Jack London.

A TALE OF TWO PORTS

A summary look at San Francisco and Oakland waterfronts in recent decades shows shipping and related activities dwindling in San Francisco, booming in Oakland. The most common explanation is to attribute the difference to better management at Oakland and containerization, a technological development that Oakland was better equipped to handle by virtue of its flat topography and rail access. The figures seem to bear out this explanation. Oakland opened its first container facilities in 1962, when its total port tonnage was approximately 2.5 million and San Francisco's was 5.1 million. By 1977 Oakland's tonnage was up to 9.2 million (about 80% containerized); San Francisco was down to 2.3 million, with only minor containerization.

However, there is more to the story. San Francisco does have railroad facilities. Southern Pacific rails come up the peninsula, connecting with the main continental lines. San Francisco does have some flat space along the southern end of its waterfront and in recent years developed some container facilities. Pier 96, at the extreme southern end of the waterfront, was completed in 1972, and was said to be the world's first LASH (Lighter Aboard Ship) terminal. Other container terminals were built the same year. However, both types of facilities were dogged with bad luck. The LASH method did not spread as rapidly as had been

predicted, and the Pier 94 container terminal, built rather hurriedly on filled land to help San Francisco catch up, has encountered difficulties owing to settling of the fill, perhaps resulting from minor earthquakes. Container facilities at Pier 96 were built primarily for Pacific Far East Line, which has since gone out of business, along with another San Francisco shipping company, States Line. Meantime, Matson Navigation and later American President Lines had moved to Oakland for lack of adequate container facilities in San Francisco. A widespread conclusion among waterfront observers was that Oakland, coming from behind, put its money into a winning new technology while San Francisco was resting on its laurels.

In recent years there have been two schools of thought about the future use of San Francisco's waterfront. One school holds that since the Port has inherited a large indebtedness and holds some extremely valuable waterfront property, the wisest course is to devote the land to its highest and best use as determined by the real estate market. Along the waterfront north of the Bay Bridge, the demand for office space, waterfront hotels, restaurants, and shops has been greater than the demand for shipping facilities. This "real estate" view has been highly influential on the Port Commission. But there is another body of opinion that shipping is ultimately more valuable to the City than additional offices and tourist facilities and that the Port should not accept the best price for land at the moment to the neglect of its waterborne commerce.

Port boosters are fond of quoting the figure that one in every 10 jobs in the City depends on the port. Others argue that while the figure may have had some validity in the past, the mechanization of port activity has diminished labor requirements to the point that tourist industries—restaurants, hotels, and shops—are far more labor intensive and provide greater employment per dollar of investment.

The shipping buffs counter that tourism is a luxury trade, that it has wild upswings in good times and sickening downswings in bad times. They maintain that if San Francisco's Port Commission were shipping oriented rather than real estate oriented, aggressive port management and a willingness to invest heavily in modernization could keep most of the waterfront area in shipping. Some observers predict booming trade with developing Far East nations that will not be equipped to handle containerized cargoes for many years, owing to the shortage of investment capital and the need to develop labor-intensive practices to utilize the large work force. Conventional break-bulk shipping of the kind handled in San Francisco will expand greatly, they expect.

Other waterfront observers scoff at any thought of the revival of shipping along San Francisco's northern waterfront as romantic non-

sense and point out that even if break-bulk cargoes do expand in the future, the crowded areas along the northern Embarcadero, carrying heavy city traffic and lacking substantial warehouse space, could not handle the load. However, proshipping factions maintain that the southern waterfront, at least, could handle greatly expanded traffic and thereby make use of San Francisco's greatest asset, deep water.

Former San Francisco Port Director Thomas Soules points out that with the prospect of increasingly larger deep-draft ships, the City's port has a great advantage: bay depths off San Francisco, ranging from 35 to 70 feet, can much more easily be made to accommodate deep-draft vessels than the shallow mud bottom off Oakland, ranging between 10 and 25 feet in the undredged portions, with a project depth of 35 feet in the main channels.

Expanded port facilities in San Francisco would require, among other things, an investment in moving rail lines and perhaps in some areas moving the Embarcadero roadway itself to route city traffic away from the waterfront. There seems to be little impetus in San Francisco for such investments.

The basic trend is undeniable; right or wrong, shipping is diminishing in favor of commercial, residential, and tourist facilities. The most recent development is the removal of obsolete piers between the Ferry Building and the Bay Bridge in favor of a federally financed promenade, offering ample public access for fishing, boating, strolling, and viewing historical ship exhibits.

All attempts so far to provide for additional public access to the bay have attracted large crowds. The latest commercial addition to the visitor-oriented attractions at Fisherman's Wharf, the Cannery, and Ghirardelli Square is a complex on an expanded Pier 39, near Fisherman's Wharf. It provides more moderate-priced restaurants, shops, and entertainment than have been available at the older facilities. With its merry-go-round and fast-food eateries, Pier 39 is somewhat closer to the old-time amusement park than to Tivoli Gardens. At the time of this writing, it has been open only during the winter months; the coming summer should reveal the full extent of public demand for this kind of waterfront use.

There may be some symbolism in the pictures on the Oakland and San Francisco telephone books. On the front cover of the Oakland book is a container ship being loaded at a very modern Port of Oakland dock. On the San Francisco book is a picture of a large, ornate Victorian house.

A comparison between the two cities brings to mind an axiom of social development. The society that made the last major technological leap forward is not likely to be the one that makes the next advance in

technological evolution. It has adapted too well to a particular technology and has a very large capital and psychological investment in that technology. The innovations are more likely to come from other, more "backward" societies not so heavily committed to existing institutions. The classic example, of course, is England, where the Industrial Revolution began and where industry is now saddled with an obsolescent plant, compared to the more recently industrialized nations. It may be that the same axiom applies to cities and that the "privilege of historic backwardness" has benefitted Oakland at the expense of San Francisco.

However, this type of speculation leads to another possibility. It is conceivable that San Francisco's deepwater advantage will be utilized to make it the leading port in the next stage of shipping evolution as ships become steadily larger. It may be significant that the new San Francisco telephone directory portrays not a Victorian house but the City's Morrison Planetarium, which could indicate that the City is about to forsake its Victorian ways and enter the space age.

A TALE OF TWO AIRPORTS

It is curious that the relative positions of San Francisco and Oakland in the field of shipping are reversed when a comparison is made between the two airports, both on man-made urban waterfronts. Whereas San Francisco has a declining port and a booming airport, Oakland has a booming port and a languishing airport.

Both airports, or their predecessors, were created in 1927, the year of the Lindbergh transatlantic flight. Oddly, San Francisco had considered a site on Bay Farm Island off Oakland, but rejected it in favor of a site on the Mills estate on the San Mateo County coast a few miles south of San Francisco. Oakland built its airport at Bay Farm Island and promptly took a major share of Bay Area air traffic. Passengers rode to and from San Francisco across the bay on fast boats. San Francisco's Mills Field, plagued by bad luck and an unwillingness of San Franciscans to pass the necessary bond issues, was in second place during the early years, although the airport came into its own in the postwar period.

In the 1960's Bay Farm Island, connected to the mainland by fill for the Oakland Airport, was the site of a celebrated case of waterfront land-use conflict. Flight paths passed over a portion of Bay Farm Island not utilized by the airport; it was occupied by truck farms, a golf course, and a tidal marsh. In the early 1960's (before BCDC), Utah Construction Company, which had constructed a large fill off the south shore of

Alameda for a residential subdivision, acquired the western portion of Bay Farm Island, not occupied by the airport, for similar purposes. The Metropolitan Oakland International Airport, which extended south from the original airport area on bay fill, had increased the number of flight paths over the area. Mindful of suits that had been filed by residents of neighborhoods in the vicinity of airports throughout the United States, alleging damage from aircraft noise, the Port of Oakland protested residential construction under the flight paths. (Administratively, the airport is part of the Port of Oakland.) However, most of the portion of Bay Farm Island involved was within the city limits of Alameda, and city officials there were interested in the property tax revenues that would be generated by the development.

After some years of conflict in public hearings and courtrooms, the parties reached a compromise agreement: in the areas of western Bay Farm Island most directly affected by the flight paths, the predominant uses would be industrial rather than residential. How satisfactory this agreement will be remains to be seen, but the episode emphasizes the need for coordinated planning of shoreline and waterfront areas. That type of planning began to emerge with the advent of BCDC, although the commission had no jurisdiction over the Bay Farm Island controversy because the work on the project began before BCDC was in operation.

But the troubles of Oakland International Airport were not over. Despite modern facilities, its greatest handicap was the same one Oakland suffered for most of its history; it was in the shadow of San Francisco. In the past 3 decades San Francisco International Airport, on the opposite shore of the bay, enjoyed (or suffered from, depending on the point of view) a huge increase in patronage, air traffic, expanded facilities, and congestion. Passenger "on and off" loading increased from 900,000 in 1947 to 21 million in 1978. Oakland traffic for 1978 was 2.8 million. Airline officials reasoned that most passengers bound for the Bay Area would prefer to go to San Francisco rather than to Oakland, and made heavy investments in San Francisco's airport. It seemed easier to expand facilities at San Francisco rather than split operations and move to Oakland.

Increasing passenger use at San Francisco also necessitated a heavy public investment in the airport and its support facilities, particularly freeways. Residents in the vicinity of San Francisco airport have persistently complained about increased noise and traffic congestion. All this at a time when a spacious modern airport directly across the bay at Oakland was underutilized.

The paradox of a very congested airport on one side of the bay and an underutilized airport on the other side has led to such proposals as the

recommendation—advanced by a member of the State Public Utilities Commission—for a rail line under the bay joining the two airports. Departing passengers would go by ground transportation to the closer of the two airports, check in, learn there which runway at which airport their flight would depart from, and proceed to the runway, by the trans-bay tube if necessary, much as if the two airports were a single facility.

Critics argue that a trans-bay tube would be inordinately expensive, both in money and energy, and that much the same goal could be accomplished simply by routing into Oakland a substantial portion of the flights that now go to San Francisco. They maintain that some 40% of San Francisco airport passengers live on the east side of the bay and would prefer to use Oakland airport if it had an adequate flight schedule. A passenger missing a transcontinental flight from Oakland might now be forced to wait some hours for another flight to the same destination, whereas San Francisco provides frequent traffic to all parts of the nation on various airlines. However, Oakland may fare better in the future. A number of international charter flights now use the Oakland airport, and there is a strong possibility that charter lines may begin operating scheduled flights out of that airport. Deregulation may also bring aggressive smaller lines into Oakland. The implications for waterfront land use are that with a better balance among airports, the growth of San Francisco International Airport would be slowed, with consequently less congestion and less demand for new waterfront freeways and new bay fill.

SAVING THE BAY: PLANNING THE SHORELINE

Since the first forty-niner hauled some rock and gravel from the foot of Telegraph Hill and dumped it into Yerba Buena Cove, thereby making himself the owner of a valuable San Francisco waterfront lot, the bay has been shrinking. Much of downtown San Francisco now rests on filled land, and at many points around the shoreline the shallows of the bay have proved an irresistible temptation to developers and land speculators who considered the bay as real estate to be filled and subdivided, to city and county officials who saw the chance to create new taxpaying communities and industrial parks, to engineers who found the bay edges an ideal place to build highways, and to local sanitation officials and garbage disposal contractors faced with the problem of disposing of thousands of tons of solid waste daily.

The ownership of the bay was fragmented: the state of California owned 50%, cities and counties, 23%, private owners, 22%, and the federal government, 5%. More important than the totals was the fact that

a large share of the privately owned land was in the critical shallows immediately adjacent to urban areas, and most of the remainder of the shallows was the property of rapidly growing cities and counties. Some 70% of the bay was less than 18 feet deep at low tide, and by 1960 some 17 square miles had been filled, principally along the waterfronts of San Francisco, Oakland, Richmond, San Rafael, and northern San Mateo county, south of San Francisco. Of the bay's 275 miles of shoreline, less than 10 miles were open to the public.

In 1959 an Army Corps of Engineers study reported that more than half of the bay was "susceptible of reclamation," meaning that it could economically be filled. As an example, the City of Berkeley had a waterfront master plan that called for filling 2,000 acres of tidelands and shallow water offshore. This plan caught the eye of at least one Berkeley resident, Catherine Kerr, wife of Clark Kerr, then president of the University of California. Like many Bay Area residents influenced by the mystique of the bay, she was alarmed at the rapidity with which the water was being turned into dry land.

Together with two other university wives, Sylvia McLaughlin and Esther Gulick, Mrs. Kerr consulted in early 1961 with some of the Bay Area's leading conservationists, and the result was the formation of the Save San Francisco Bay Association. Unlike some well-intentioned but ineffective conservationists who rely chiefly on moral indignation, the Save-the-Bay people did their homework. They consulted economists and engineers about the feasibility of the proposed fill; they talked to city planners and sociologists; and they confronted the Berkeley City Council with an impressive array of hard facts. They persuaded the council that the bay—at least Berkeley's portion of it—had a higher destiny than to be filled and used as dry-land real estate.

The Save-the-Bay movement spread from Berkeley to the other shores and became a potent political force, allied with the Sierra Club and other existing conservation groups. The case for saving the bay was more than aesthetic. It also rested on the ecological role of the bay, its functions in nurturing fish and wildlife, in oxidizing urban wastes that drain into it, and in tempering the climate of the region.

It became evident that a comprehensive plan for the bay was needed to protect it from the degrading impact of decisions made by some forty jurisdictions concerned only with limited portions of the estuary, often with disregard for the bay as a single resource valuable to the entire region. In the absence of any regional authority, a comprehensive plan could only come from the state. A ground swell of public support for the bay—perhaps it could better be called a tidal wave—reached Sacramento and resulted in the passage of the McAteer-Petris "Save the Bay" Act

in 1965, despite the opposition of powerful corporate and municipal interests that owned large sectors of the bay and had other plans.

The new Bay Conservation and Development Commission was ordered to draw up a comprehensive bay plan and meantime to exercise permit authority over any proposed fills. The commission was composed of 27 members representing federal and state agencies, cities and counties, and the public.

In 1969, after 4 years of hearings, studies, and planning, the Bay Plan was presented to the legislature and approved after a dramatic political battle during which the Save-the-Bay troops converged in Sacramento by the hundreds. The plan provided for a balance of uses, including top priority for industries dependent on shipping, for recreation, ports, and airports. The shoreline designations were specified on detailed maps. The act gave a reconstituted BCDC permanent permit authority over bay fills and dredgings and over a 100-foot strip of shoreline around the bay in order to assure public access. The act declared that "further filling of San Francisco Bay should be authorized only when public benefits from fill clearly exceed public detriment from the loss of the water areas and should be limited to water-oriented uses . . . or minor fill for improving shoreline appearance or public access to the bay."

The key phrase is "water-oriented." Fill for non-water-oriented uses, such as residential structures and office buildings, are not permitted. (Structures on piles are regarded as fills.) From 1965 through 1977, the commission received and held public hearings on 242 major permit applications. About 80% of these applications were ultimately granted, but most of them had conditions attached to assure minimum fill and public access. In about 98% of the cases the commission accepted the recommendations of its full-time staff of about 30. Three case studies will illustrate how the commission works.

1. Emeryville is a small industrial city lying on the east shore of the bay between Berkeley and Oakland. Before BCDC came into existence in 1965, the City had filled about 10% of its 760 acres below the high-tide mark. Two days before BCDC assumed authority, the City Council adopted a master plan for filling 636 of its underwater acres for housing, shops, motels, parks, schools, and a civic center. Some of the fill had been placed before that date, and the City maintained that the entire area was exempt from BCDC jurisdiction under a grandfather clause. The California Supreme Court ultimately decided against the City, and the plan was abandoned because many of the uses were clearly non-water-oriented and would be in violation of the Bay Plan.

In 1968 Emeryville presented BCDC with a new plan calling for a 650-

berth marina and some fill for parking and retail stores. The BCDC staff maintained that the stores were not water-oriented facilities and that the fill for parking was larger than necessary. So the City came back with another plan for a 520-boat marina, with about 13 acres of fill for parking and incidental uses. The BCDC staff still believed that the parking fill was larger than necessary, and the City subsequently reduced the marina to 300 berths and an 8-acre parking fill. That plan was approved. But when the fill was finished, it turned out to be 12 acres instead of 8.

At a public hearing, a number of people testified that BCDC should require Emeryville to remove the excess 4 acres of fill. Others believed that the 4 acres should remain but be dedicated to public use. The commission agreed with the latter course, restricted uses to public access, park, and landscaping, and required that the City provide $250,000 worth of public benefits elsewhere along the bay shoreline.

2. Richmond is a port city on the East Bay shore north of Berkeley and is the location of a large refinery of the Standard Oil Company of California. The Standard wharf handles oil tankers; the City's port handles general cargo in small quantities compared to San Francisco and Oakland. The Bay Plan designated most land areas on Richmond's southern shoreline for port uses. In 1975 the commission participated with Richmond in developing a special-area plan for the southern shoreline. Richmond's urban renewal plan recommended residential and commercial uses and a large marina in place of the port uses designated by the Bay Plan.

The joint investigation indicated that Richmond could accommodate port development elsewhere—at existing vacant and underutilized land at the Inner Harbor Channel, part of a World War II shipyard—without substantial filling. So the Bay Plan was changed to permit the marina and to reserve the Inner Harbor Channel areas for future port development.

3. The Dumbarton Bridge was an old, low-level bridge across the narrows of the south bay between Palo Alto and Fremont. In 1973 the State Department of Transportation applied to BCDC to replace the old bridge with a four-lane high-level bridge including pedestrian and bicycle pathways. The project would involve filling some 76 acres of wetlands for the approaches and the larger bridge.

The California Environmental Quality Act (CEQA) requires mitigation for any unavoidable adverse environmental effects. Although the Bay Plan has no provision for mitigation, BCDC made use of CEQA to require mitigation, and the BCDC permit stipulated that 200 acres of dry land diked off from the bay must be acquired and opened to tidal action. A 217-acre diked-off area in Hayward was used for the mitigation; the

dikes were opened and restoration of the natural marsh was financed as a condition of the permit. In effect the bay was enlarged by far more than was lost.

Since 1974, BCDC has followed the mitigation policy with such success that despite permitted fills, the bay has had a net increase in size. The overall figures are as follows: Between 1850 and 1940, the average rate of diking and filling in the bay was about 1500 acres per year. From 1940 to 1965, the rate increased to about 2300 acres a year. While the Bay Plan was being prepared (1965–1969), BCDC authorized an average of 94 acres of fill per year, principally for airport expansion. After the completion of the plan in 1969, the rate dropped to 29 acres a year, and, as we have seen, since 1974, as a result of mitigation policies, the net rate of fill has been less than zero and the bay grew larger.

Meantime, important marshlands and recreation areas have been preserved or extended; public access to the bay has increased from 10 miles to about 35 miles; and there has been extensive shoreline recreational development. Perhaps one of the most important aspects of the Bay Plan, as BCDC Executive Director Charles R. Roberts points out, is that city planning and county planning, independent of BCDC, are following the policies of the Bay Plan for minimum fill and maximum access. The Bay Plan has had a powerful impact on planning throughout the region, encouraging greater respect not only for the bay but other aspects of the natural environment as well.

What all this adds up to is a balanced, rationalized method of land-use planning that reconciles conflicting interests by careful negotiation under specific legislative guidelines and the overall goal of preserving and using carefully a major natural resource. In the beginning the obstacles seemed insuperable. On the one hand was the tradition of private ownership of land and local determination of how public land should be used. On the other was the need to protect and manage a regional resource. How was it possible to deprive an owner of his "right" to fill his land on the bottom or the tidal edges of the bay? It seemed that the irresistible force, the public interest in the bay, was meeting the immovable object, the right of an owner to use his land.

Despite the threat of suits for inverse condemnation, the bay commission has usually been able by careful deliberation and negotiation to merge the conflicting interests, permitting some uses of the land while denying others, offering a model for the reconciliation of similar land-use conflicts elsewhere—along coastlines (California's Coastal Commission was patterned on BCDC), in scenic areas, on public lands, and on private lands affected with a public interest. No one would contend that the commission has always made the right decision or that

the bay legislation is perfect as it stands, but the major principles and procedures are now taken for granted.

Catherine Kerr of the Save San Francisco Bay Association in general approves of the work the commission has done, although she believes that in some cases the commission might be more aggressive in asserting the public interest in private lands. Developers and affected landowners, while not happy about the commission's restrictions, generally accept the existence of BCDC and its authority.

One criticism is that the definition of water-oriented uses is too narrow. Allan B. Jacobs, Chairman of the Department of City and Regional Planning at the University of California, was San Francisco's Director of City Planning at the time the City's first Northern Waterfront Plan was prepared. That plan provided for various uses, including housing, to be introduced as maritime activities were phased out. The plan was disapproved by BCDC after the Attorney General ruled that housing was not a water-oriented use.

Jacobs believes that the law should be revised to accommodate housing, that residential uses can be as water-oriented as restaurants and shops, and that public access could easily be provided. He believes that the need for housing is urgent and that too many retail stores on the City's periphery could have the same result as suburban shopping malls, drawing trade away from the downtown district to the detriment of the City center.

However such conflicts might be resolved in the future, BCDC offers a model for reconciling irresistible forces with immovable objects. On a piecemeal basis, and not without blood, sweat, and tears, it has managed thus far to accommodate both the mystique of the bay and the need for economic development, an accomplishment of no mean magnitude.

A NOTE ON SOURCES

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On the San Francisco Bay Plan and the San Francisco Bay Conservation and Development Commission, historical background: *Future Development of the San Francisco Bay Area, 1960–2020,* San Francisco District, Corps of Engineers, 1959; *The Future of San Francisco Bay* by Mel Scott, Institute of Governmental Studies, University of California, 1963; *The Saving of San Francisco Bay* by Rice Odell, The Conservation Foundation, Washington, D.C., 1972. Information on the operation of BCDC is from oral communications from Charles R. Roberts, Executive Director, Bay Conservation and Development Commission; Stanley R. Euston, Chief Planner, BCDC; Michael Bennett, Assistant Planner, BCDC; Keith Watson, BCDC Staff Design Analyst; Catherine Kerr, Save San Francisco Bay Association; Allan B. Jacobs, former San Francisco Director of Planning; Rai Y. Okamoto, San Francisco Director of Planning; Joseph E. Bodovitz, former Executive Director, BCDC; and from *Annual Reports,* 1970–77, BCDC; *Bay Plan Evaluation Project,* BCDC, 1974; "Is BCDC Accomplishing Its Task?" speech by William D. Evers, BCDC Chairman, October 4, 1973; and *The BCDC Experience As A Coastal Manager,* paper by Alan R. Pendleton, Staff Counsel, and Charles R. Roberts, Executive Director, BCDC, undated. For general assistance I am also indebted to Robert H. Langner, Executive Director, Marine Exchange of the San Francisco Bay Region. However, all matters of accuracy are the sole responsibility of the author.

Waterfront Development and Change: Jacksonville, Florida

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INTRODUCTION

The purpose of this paper is to identify major interactions among several aspects of the development of the Port of Jacksonville, Florida. The aspects include particular developmental interactions such as economic, land and water use, and governance. This may be illustrated by the Vann diagram in Figure 1. It is the interaction of these aspects of port urban life and the hinterland to which port development is attributable. The narrative traces these aspects during the very early development of Jacksonville, the years between the two world wars, and the post-World War II booming period of both Florida's and Jacksonville's development. Material descriptive of shore development, harbor improvements and development, and land-side transportation serves to build a picture of land and water use as the Jacksonville Port has developed. Material

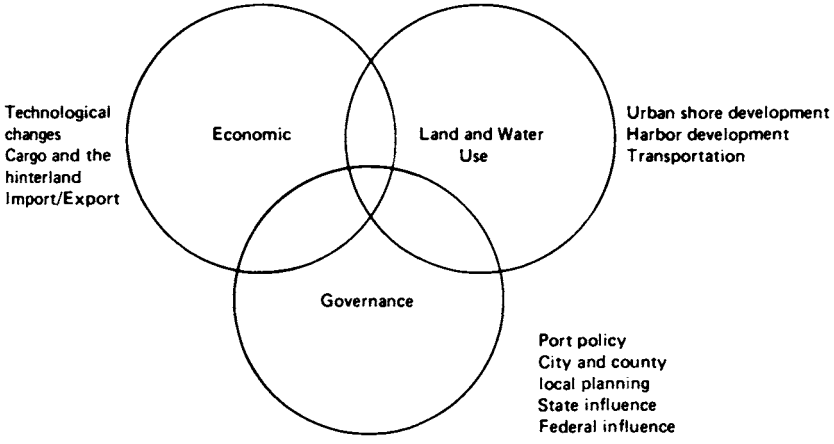


FIGURE 1 Illustration of overlapping aspects of Port of Jacksonville development.

descriptive of policy evolution is perhaps a little more difficult. Many changes in governance of the City of Jacksonville and Duval County have occurred in the past 3 decades. Local planning, influenced by emerging federal/state environmental imperatives, coastal zone planning, and regulatory policies form a major influence on recent port development.

Following a very brief history of early Jacksonville, the second part of the paper reflects the post-World War I era. Jacksonville as an urban environment grew from a population of 113,540 in 1920 to an estimated population of 257,000 in 1945 (Davis 1976). The Port of Jacksonville grew in total short tonnage from 2,507,490 to 2,805,724 (U.S. Army 1921, 1952). The third period begins with the ending of conflicts in World War II through the postwar Florida boom years to the present time. The paper will also view very recent port and urban development trends and seek to make some observations related to the interaction of development aspects in the light of these three eras.

HISTORICAL BACKGROUND

The Cowford, as the aboriginal Indians called it, was located on the south bank of the St. Johns River, 24 miles up river from the Atlantic Ocean. This place was first settled during 1763 by the English. It was then the site of a ferry landing on the "Kings Highway," a trail that served to connect St. Augustine to Georgia. The north side of the St. Johns River remained virgin forest until 1791 when Robert Pritchard

obtained a Spanish concession and became the first settler on the site of "Old Jacksonville" (Davis 1976).

This small start was eventually abandoned. It was not until 1816 that Lewis Zachariah Hogans constructed his house and became the first permanent settler. Others soon followed and settlement increased (Davis 1976).

In 1821 Spain ceded the Florida Territory to the United States. I.D. Hart then conceived the idea of laying out a town site at the Cowford. It was not a simple matter, for landowners required convincing before they donated land for streets. The town was surveyed late in June, 1822, and named in honor of a southern idol, General Andrew Jackson (Davis 1976). In this same year Duval County was created and Jacksonville became the County Seat.

Following the reconstruction period of the American Civil War, tourists slowly discovered Jacksonville and later more of Florida. Davis (1976) reports: "The railroads began their building and extension with Jacksonville as their focal point," creating the "transportation epoch." Orange groves along the St. Johns, set out after the war, came into full bearing and furnished a lucrative trade for river steamboats. With the inception of improvements in the river and harbor, outside steamer lines established operations (Davis 1976).

EARLY DEVELOPMENT

Sixty-three miles to the west, Lake City, Florida, was the origin of the first railroad to serve Jacksonville in 1860. The population of the City was 2,118. Crossing the river from the mouth at irregular intervals, in 1879 two small steam ferries replaced earlier hand-rowed boats. Later in this decade the first ocean ships used the Port of Jacksonville. By the end of the decade and the beginning of the 1880's, Congress appropriated $125,000 to start work on the Mayport jetty in the Atlantic Ocean at the mouth of the St. Johns River. Even though shifting shoals had been a recurring problem, the Port of Jacksonville cleared an average of 550 ships a year from 1870 to 1886 (Davis 1976).

In 1895 a 15-foot channel along the St. Johns River was completed between Jacksonville and the Atlantic Ocean. The total cost of this project was $1,785,000. By 1900, the City's population had grown to 28,429. Ferry service continued to provide the only river crossings until the Acosta Bridge was opened in 1921. The City of Jacksonville and Duval County had a population of greater than 113,540 people. During the first 2 decades of the 20th century, the City of Jacksonville constructed the Municipal Docks and Terminals on the north bank of

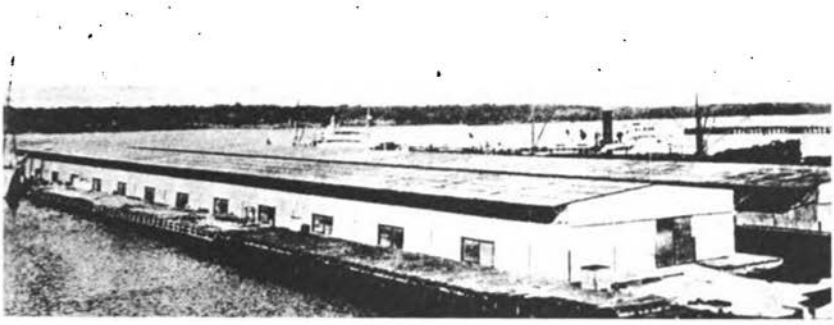


FIGURE 2 View of municipal piers and warehouses, Main Pier No.2.

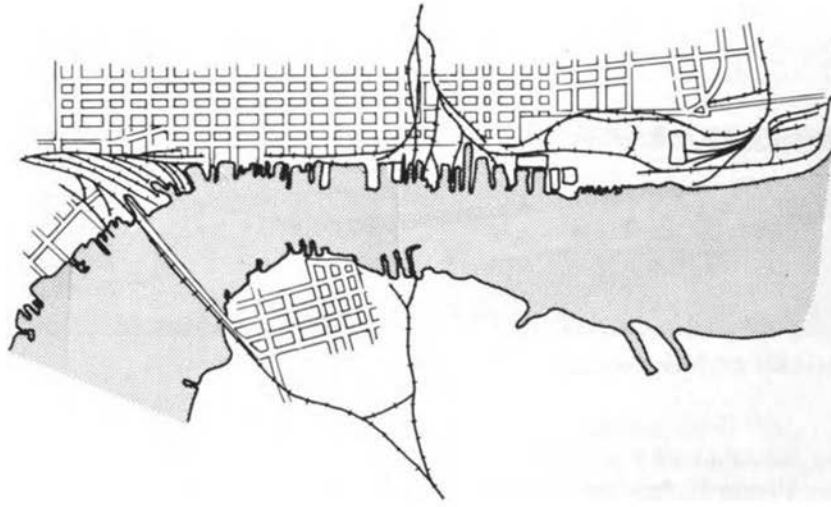
the St. Johns at a point 3 miles downstream from the business district (see Figure 2). This development cost $1,500,000.

During these early years the river channel was authorized to 24 feet in 1907 and to 30 feet in 1910 (U.S. Army Corps of Engineers 1977). As river capacity increased, lumber, naval stores, citrus, and tourist trade formed the fundamental business of the Port of Jacksonville. The site of the City and its adjacent port activity was of no military significance. This emerging urban place for commerce and trade developed to the north from the historic ferry crossing.

JACKSONVILLE HARBOR

The Port of Jacksonville is located along the St. Johns River, about 145 nautical miles south of Savannah, Georgia, and 345 nautical miles north of Miami, Florida. Waterfront facilities are located along the banks and on Blount Island in the 24-mile reach of the river between its mouth and downtown Jacksonville, Florida (U.S. Army Corps of Engineers, 1976). (See Figure 3.)

By 1920 the City of Jacksonville had completed municipal docks, located 19 miles from the mouth of the river. These docks, located across land approximately 3 miles northeast of the business area, provided 144 acres on 30 feet of water for the docks. Active, privately owned finger piers on the north side of the river were central to port activity. The development of private piers resulted from the traditional river crossing and the early settlement pattern of the old town laid out in 1822. In addition, the rail yards were in close proximity to the finger piers and the Atlantic Coast Line rail links were extended from the yard to the west to serve the downtown dock area. The Seaboard Coast Line Railroad with



SOURCE: City Council (circa 1925).

FIGURE 3 Jacksonville downtown business district and port development during the 1920's.

the Jacksonville Terminal Line served the docks from the north. The urban settlement was compact, lying entirely within a 4-mile radius of the site for Acosta Bridge (completed in 1921) and the business district.

By 1930 the population of Jacksonville had grown by 40,000 and the urban area was spreading into surrounding Duval County. An additional 25,000 people had settled outside the corporate limits, making a total county population of 155,503. There seems to be little doubt that the completion of the Acosta Bridge and the construction of Beach Boulevard influenced the settling of South Jacksonville and Arlington (Davis 1976). In 1941 the Main Street Bridge over the St. Johns River was completed and the 167-year-old ferry service ended.

URBAN SHORE AND HARBOR DEVELOPMENT—CIRCA 1920–1950

By 1921 the St. Johns north shoreline was developed to serve shipping interests. The only residues of non-port-related land uses appear today between Trout River and Long Branch. Very little port-related development occurred along the south bank of the river. The only major development occurred at the mouth of the river, when the Mayport Naval Station was commissioned in 1943 (Davis 1976). Some marine-

related facilities were developed on the south bank of the river opposite downtown Jacksonville and an electric generating plant was constructed. The location and maintenance of the navigation channel project favored the development of the north bank of the river. This had a significant impact upon shoreland development along the river.

By 1921 there were 28 general wharves having a total frontage of 18,000 feet. Railroads serviced 20 of these wharves and all had highway access. Additionally, 40 piers used for boatyards and general freight provided 22,000 feet of berthing space. Railroads served 29 of these piers. These wharves and piers were privately owned by railroads and shipping interests (U.S. Army 1921). Such developments were concentrated along the north bank of the river between Acosta Bridge and Commodore Point. Commodore Point was being developed by private interests for additional maritime use. Its large outside storage areas provided space for lumber and other commodities, and was "the largest primary naval stores market in the world" (City Council circa 1925), and " . . . Florida's output of rosin and turpentine is larger than that of any other state" (City Council circa 1925).

The city docks at Tallyrand, 3 miles downriver from downtown Jacksonville, consisted of two piers. Each was well equipped with railway tracks connecting all railways, a cotton compress, and mechanical freight-handling devices. In addition, the City owned a modern pier, with warehouses and offices in the downtown business district (U.S. Army 1921). By 1925 bulkhead and pier space was situated for 1.5 miles along the riverfront. There were three piers, two improved with transit sheds. The open pier was used for lumber and railroad crossties, all products of northern Florida silva culture. The City owned and operated a terminal railroad which provided a necessary service along the entire waterfront (City Council circa 1925).

Located alongside the downtown city pier were at least dozens of private wharves and piers. Even with these improvements, the Corps, in its 1921 report (U.S. Army 1921), observed: "Advantage would be gained by increasing the depth of water at piers and wharves and in the channels leading to the main ship channel and by increase of freight handling devices, and by completing the belt line from Six Mile Creek to McCoy Creek, paralleling the waterfront."

By 1920 the St. Johns River harbor project was completed to a 30-foot channel 300- to 600-feet wide, including training walls and revetments at various locations (U.S. Army 1921, Davis 1976). All commerce utilized the improved channel. Of the 2,507,490 short tons for the year, 14% was borne by steamships drawing from 20 to 26 feet, while an additional 64% was carried on steamers, sailing vessels, and barges drawing from 10 to

TABLE 1 Tonnage and Passengers Handled by the Port of Jacksonville

Year	Tonnage	Passengers
1916	2,118,492	76,558
1917	1,712,253	53,437
1918	1,491,019	32,290
1919	1,672,227	31,613
1920	2,507,490	67,513

SOURCE: U.S. Army Corps of Engineers (1921).

19 feet. No new transportation lines were established in 1920 (U.S. Army 1921).

During the 5-year period including 1920, a marked variation in tonnage and passengers occurred. Table 1 shows a significant dip in commerce of the Jacksonville Port between 1916 and 1920.

During these times the dominant influences in the Port of Jacksonville were private. The City Council (circa 1925) stated: "The Port of Jacksonville is not, in the usual sense of the term, a publicly operated port, most of the larger steamship terminals being under railroad, municipal, steamship and other private ownership operations."

The City operated the Tallyrand Docks and one downtown pier which were only a small part of port activity. By 1927 Imeson Airport, some 7 miles north of Jacksonville and across the Trout River, was completed, and the Atlantic Coast Line Railroad inaugurated 24-hour passenger service to New York. Port tonnage reached a peak for the 1920 to 1945 period of 3,650,000 short tons (Davis 1976). In part related to the port activity, Jacksonville was becoming a transportation and commercial node for northern Florida and southern Georgia. In addition, state and federal agencies located in Jacksonville and the city was becoming an administrative center.

By 1945 the Corps of Engineers was authorized to construct the Dame Point-Fulton cutoff along the south side of Blount Island, effectively shortening the river channel by approximately 2 miles from the Atlantic Ocean to Acosta Bridge. In this same year the entire river channel was authorized to 34 feet (U.S. Army Corps of Engineers 1977).

The interactions among the three aspects of port development—economic, governance, land and water use—during the period 1920 to 1945 are not completely documented by any local source. Such interactions are seldom the concern of record keepers. One indicator of port activity and urban change is shown in Table 2. In this table port tonnage and population are shown as they change from 1920 to 1950.

A population increase of 168% in Duval County during 1920–1950 is

TABLE 2 List of Population and Tonnage by Decade, 1920–1950

Year	Population[a]		Tonnage (Short tons)
	Jacksonville	Duval County	
1920	92,558	113,540	2,507,490[b]
1930	129,549	155,503	3,497,226[c]
1940	173,065	210,143	3,112,958[d]
1950	204,517	304,029	4,159,074[e]

SOURCES:
[a]Davis (1976).
[b]U.S. Army (1921).
[c]U.S. Army (1931a,b).
[d]U.S. Army (1946).
[e]U.S. Army (1952).

compared to a tonnage increase of only 66% during the same period. This in part can be attributed to a decrease in foreign tonnage from 940,943 in 1920 to 804,395 in 1950. The entire increase is primarily attributable to coastwise and local port shipments. Significant in these numbers is the fact that Jacksonville continued to be a port in which imports, being 82% of total tonnage, dominated traffic (Davis 1976). Jacksonville appears to serve its hinterland as a distribution center for imports. Commodities coming in during this period included cement, coal, dry goods, feed, fertilizer and fertilizer materials, grain, flour, pyrites ore, salt, and other producer goods. Automobiles were also included, but it is not clear whether these were imports or exports. By 1950 automobiles were a substantial import item (U.S. Army 1931a,b, 1952).

During this period the development of the downtown business district and the waterfront were influenced by the heavy rail and truck traffic that occurred along the wharves and piers from Acosta Bridge to Commodore Point. The center of the business district, Hemming Park, was five blocks inland from the waterfront.

Two bridges for vehicular traffic and one bridge for rail traffic served as river crossings through 1952. At that time the Mathews Bridge "led to rapid development of the suburb of Arlington" (Davis 1976). The downtown business district remained the center of commerce and administrative services until the early 1950's. Suburban shopping centers and office parks located easterly toward the ocean on the south side of the river. Centers also emerged south along the U.S. 1 corridor, and on the north side of the river, south along the U.S. 17 corridor.

SUMMARY

Port development thus seemed to occur along the river with increasing activities evident downriver from the business district. No statistics are available to confirm this "drift to the sea," but by the 1940's deteriorating wharves and piers coupled with a gradual shift from rail to truck transport to and from downtown docks seemed to be a clear bellwether. The accessibility of the waterfront for shippers was diminished because the same streets serving business district ingress and egress were shared by the trucks and other traffic generated by the docks. Street traffic and rail traffic used the same corridors east and west along the downtown waterfront. With the addition of river crossings, more business traffic—not port-related—compounded the problem of congestion.

State and local land development policies appear to have had only nominal influence through these years. The use of the river was dominated by private investment interests. Environmental concerns were not perceived to be important. Jacksonville was an industry- and commerce-minded community. Adjacent to Commodore Point the City erected the Gator Bowl in 1946, and, from 1940 to 1943, three major naval bases with much local support were commissioned. Mayport Naval Base was located on the south bank of the St. Johns River at its mouth and the Naval Air Station was located on the north bank upstream from downtown Jacksonville. Cecil Field was located inland about 10 miles west of the business district (Davis 1976).

In the early 1940's the changes were foretelling major economic changes in Jacksonville's future.

POSTWAR JACKSONVILLE

One significant land resource in Jacksonville is the north bank of the St. Johns River. The Port of Jacksonville stretches from Commodore Point to Fulton Cut at the eastern end of Blount Island, a distance of 14 miles. Rail service existed for half this distance in 1950, and highway access for 12 miles. With the exception of the north bank of the river from Jacksonville Shipyard west of Commodore Point to the Acosta Bridge, maritime activities are the dominant shoreland use.

From Commodore Point downriver along the north bank, market forces have resulted in development of private port interests. However, development has been incremental and spotty along this reach to Trout River, and then from Trout River to Drummond Point, Broward Point and Dame Point, just 12 miles from the Atlantic Ocean. Even though

development has been uneven, very few non-port-related activities have resulted in development.

URBAN DEVELOPMENT

With the completion of the Main Street Bridge the settlement of South Jacksonville was assured. Development of suburbs to the north and west of the river quickly yielded to the more attractive undeveloped areas south and east of the river. The south bank of the river had not been developed by significant port-related activities; thus in the early 1940's it was largely undeveloped. This provided access for new residential, commercial, and institutional uses. For instance, in 1947, Jacksonville Junior College (now Jacksonville University) moved to the south bank of the river in the Arlington area (Davis 1976). Arlington slowly emerged as a very desirable bedroom community for Jacksonville. It was a tedious trip for commuters: they had to negotiate one of the two bridges on the trip from the business district south over the river, and then travel east along Atlantic Boulevard and finally north to Arlington. The Atlantic beaches were also becoming popular for local recreation and tourist trade. Because of the lack of port development on the south bank of the St. Johns River and the accessibility of the Atlantic beaches, little competition for river frontage along the north bank emerged among industrial, residential, or recreation developers.

However, the competition for shoreland did develop in downtown Jacksonville. By the latter part of the 1940's the downtown docks and wharves had been allowed to fall into disuse and bad repair. Many years of public debate regarding the conditions of the waterfront culminated in the gradual "clearing away of the piers" in the early 1950's (Dena Snodgrass, Historian, personal communication, February 1979). Both publicly owned and privately owned properties were replaced by a riverfront drive and public parking lots. The City, predicated by an approved bond issue, proceeded with plans and construction. *The Florida Times-Union,* July 25, 1954, reported that "work will start tomorrow" on the parking lot (Snodgrass, personal communication, 1979). These parking lots extend "from Hogan Street east under the Main Street Bridge, and on eastward to half a block beyond Liberty Street," very close to the Jacksonville shipyard property. This project was completed in 1956.

Along the northern edge of this riverfront parking a number of major building projects, both public and private, were underway. In 1958 the Duval County Court House was completed. Davis (1976) observed:

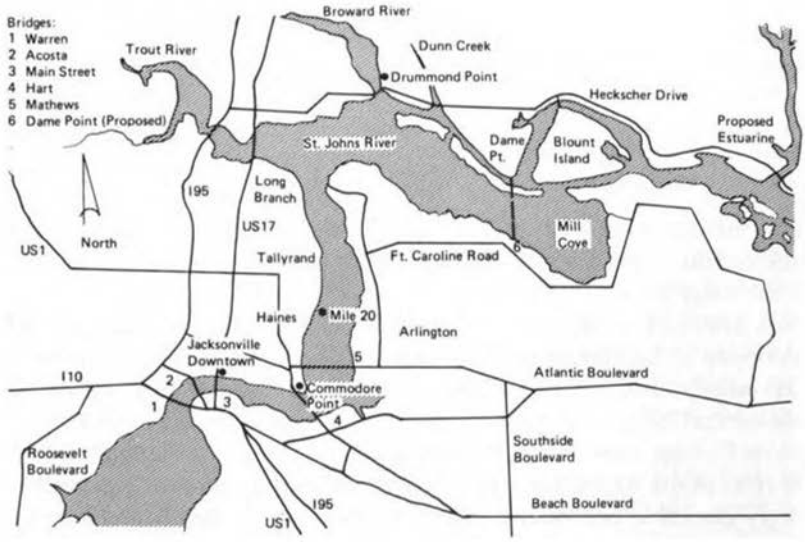


FIGURE 4 Jacksonville waterfront area.

This highrise building, along with the new City Hall and waterfront parking lots are but one phase of Jacksonville waterfront development. Some $56,000,000 went into waterfront development during the decade. Dilapidated and disreputable looking wharves, piers, and buildings were torn down. In their place new skyscrapers were built along the scenic waterfront drive. . . .

Among these large projects were a large Sears, Roebuck store and the new 14 story headquarters building for the Atlantic Coast Line Railroad, completed in 1959 and 1960, respectively. Just one block off the waterfront a new $3,500,000 city library was completed in 1964 (Davis 1976). (See Figure 4.) With these developments port-related activity along the St. Johns River from Acosta Bridge to the Jacksonville Shipyard was ended on the north bank. In addition to these developments, the south bank did not escape investor interests.

In 1955 the Prudential Insurance Company opened its multistory regional office tower just west of Acosta Bridge on the south bank. By 1966 the City of Jacksonville had completed a "showplace waterfront park" (Davis 1976), and an art museum was opened. By 1970 the Gulf Life Tower and hotel/shopping complex were completed just east of Main Street Bridge. Just recently the author has observed the development of a hotel between the Gulf Life complex and the Jacksonville Electric Authority generating plant, thus removing the last residue of

maritime activity on the south bank in juxtaposition to downtown Jacksonville.

The Port of Jacksonville was moving downstream, assisted by the construction of an expressway system. The Jacksonville Expressway Authority began construction of a network of limited-access highways in the late 1950's. This resulted in part from the completion of the John Mathews Bridge in 1954. This bridge connected downtown Jacksonville to suburban Arlington and later tied into the Haines Expressway, which paralleled the north bank of the St. Johns River from Commodore Point to just south of Trout River. This system of highways provided excellent access to the waterfront downriver from downtown Jacksonville. By 1965 the channel depth was authorized to 38 feet to mile 20, a point just south of Tallyrand Terminals (the old city docks). See Figure 4 for the location of some of these significant projects.

A convergence of demand for waterfront space for civic and private projects and the need for larger spaces to handle containerized cargo seemed to force port activities downriver. The deeper channel to mile 20 also favored this movement. In 1973 this phenomenon, covertly or overtly, affected consideration for future land-use goals.

In its publication, *Policies and Standards Handbook,* the Jacksonville Area Planning Board (1973) includes in its goals: " . . . reserve for present requirements, and long range future growth, the lands best adapted for industrial and port development, and to prevent their development for other purposes." These "Policies and Standards" were adopted in 1976 (Balraj K. Mehta, Chief of Comprehensive Planning, Jacksonville Area Planning Board, personal communication, December 1978). The illustrated land use in Figure 5 shows a tacit commitment to protect the north bank of the St. Johns River for port purposes.

In 1979 the Jacksonville Area Planning Board and the City Council must adopt a land-use plan. This action, predicated by general law, is mandated by Florida law. Mehta sees little prospects of any change in the old 1973 land-use plan as it relates to port development. As the Jacksonville urban area grows, it seems reasonable to conclude that port development will remain a major concern of public policy and land uses.

OIL AND AUTOMOBILES

Oil emerges as the primary commodity handled by the Port of Jacksonville. From 2.9 million short tons in 1950 (U.S. Army 1952), representing 69.9% of total harbor tonnage, to 10.1 million short tons in 1976 (Jacksonville Port Authority 1977). This represents 70.3% of total port tonnage.

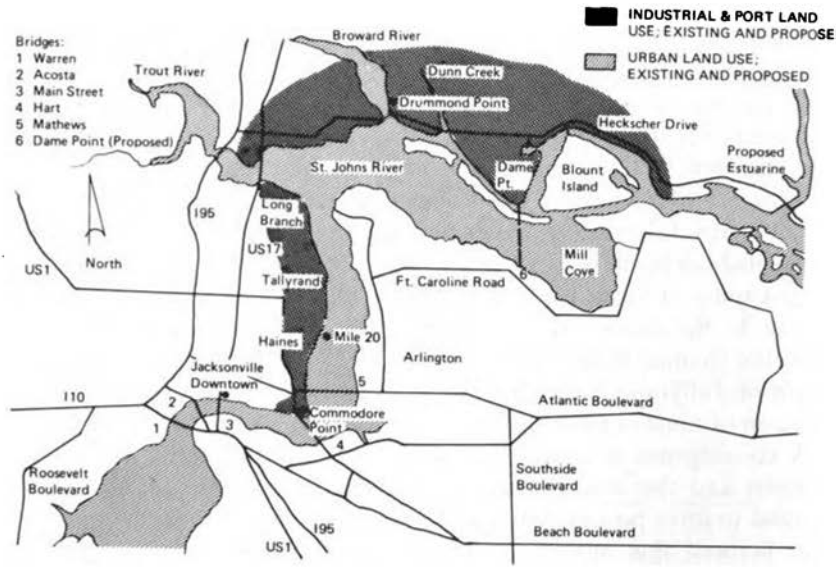


FIGURE 5 Land use in Jacksonville waterfront area.

With four U.S. Navy oil docks and 12 commercial docks (U.S. Army Corps of Engineers 1971), river traffic is impacted by not only incoming vessels, but also through the use of barges to distribute oil products to the Naval facilities and upstream to various industrial consumers. Oil commodities facilities form a crescent from Long Beach Cut up to Drum Creek Cut, a stretch of some 5 miles along the St. Johns River.

Gasoline and residual fuels are distributed over northern Florida and southern Georgia from the Port of Jacksonville. Increased channel depths have allowed deeper draft bulk cargo access to this important Port.

In terms of land-use impact, the importation of automobiles exploded. A large part of Tallyrand Terminal, with 71 acres (Jacksonville Port Authority 1977), and 50 acres at Blount Island are used for this purpose. Although the percentage of total tonnage has not significantly increased from 1950 to 1976 (0.3% and 1.7%, respectively) the total tonnage has risen from 12,767 short tons in 1950 (U.S. Army 1952) to 245,255 short tons in 1976 (Jacksonville Port Authority 1977). This tremendous growth has made the Port of Jacksonville "number one" on the Atlantic Coast in car imports (Jacksonville Seafarer 1978).

Continued growth in oil commodities is expected with the creation of

Dunn's Terminal, upstream from Blount Island on the north side of the river, and room for automobile import expansion has been planned on 50 acres of Blount Island.

GOVERNANCE CHANGES

By the end of the 1950's Jacksonville and Duval County had recognized the public authority as a means of focusing attention on policies and the concentration of public resources. Pursuant to this perception, they asked the Florida legislature to create a Jacksonville Expressway Authority and a Jacksonville Electric Authority. In addition, the legislature in 1963 created the Jacksonville Port Authority (JPA). By the middle of the 1970's a Downtown Development Authority had been added to the authority pantheon.

Upon the creation of the JPA, the state of Florida deeded to it Blount Island. Blount Island begins at a point about 8 miles upstream from the Atlantic Ocean along the St. Johns River. At one time, it was a natural island group, forming the southern shore of the oxbow in the St. Johns and composed of Alligator, Vicks, and LeBaron Islands. This natural area had long been used as a spoil for channel dredging. As spoilage increased it thus grew as a relatively high and desirable site for additional port activity.

Tallyrand Terminals were beginning to deteriorate in 1963. With the creation of the Port Authority, redevelopment began. In these beginning years the authority was funded by $800,000 annual contribution from the City of Jacksonville, added to its own revenues, and bolstered by a $25,000,000 general obligation bond issue on which the City is obligated to pay the principal and interest (Howard Publications, Inc. 1978).

In its *1977 Annual Report* (Jacksonville Port Authority 1977), the JPA Chairman reports: " . . . that the governing board once again was able to forego the $800,000 appropriation from the City of Jacksonville—and—in addition assumed $425,000 principal and interest payment." This reflected the financial strength gained in 14 years of JPA operations.

By 1977 the Port Authority had also completed the Jacksonville International Airport, and the two major seaport facilities—Tallyrand Terminals and Blount Island—were in very good financial condition. Lest the JPA be confused with the Port of Jacksonville, the JPA currently handles "a little more than 22% of the total tonnage" of the Port of Jacksonville. The balance of the tonnage is moved over private facilities (Jacksonville Port Authority 1977).

In 1967 the voters of Jacksonville approved a new chartered government that consolidated the City of Jacksonville and Duval

County. The population of the county was estimated to be 548,800 (Davis 1976). In 1968 the new government was official. The JPA became a legal part of the new government but it maintained its relative independency for policy and administrative purposes. The new consolidated government subsumed the Jacksonville Area Planning Board and many other disparate governmental functions.

SUMMARY

The interactions of land and water use with the economics of port development and governance emerge in a pattern during this period. Clearly the development of port activity is high on the public agenda. The movement toward the sea, or downriver, in part results from these interactions. The Port needs more space, and space is available downriver and assured by planning officials to be available. Jacksonville's settlement patterns—the move to south of the river—favor the policy of preserving riverfront for port purposes. Planning officials are supported by this intraurban settlement trend. Conflicts in land use seem small.

DAME POINT BRIDGE AND BLOUNT ISLAND DEVELOPMENT

Daniel Leininger, Director of Engineering for the JPA (personal communication, December 1978), however, does see two areas of future conflict. Both are rooted in the state of Florida's commitment to environmental protection.

As the Port develops on Blount Island, two natural estuarine regimes are threatened. To the south across the main channel of the St. Johns River lies Mill Cove. Along the southern shore of this shallow body of water, valuable residential development has occurred. The preservation of these waters and bottoms for recreation and commercial fishing is important to the residents, the fishermen, and the state of Florida. In addition to Mill Cove, to the east of Blount Island along the north bank of the St. Johns River lie several thousand acres of estuarine systems. Most of this area, about 5 miles along the river, is scheduled for acquisition by the state under its Endangered Lands Program. This acquisition would permanently set aside the area for preservation.

These two issues of environmental concern may halt any further movement of the Port of Jacksonville toward the ocean. In addition, the classification of the water in the river concerns the port engineer. The Florida Department of Environmental Regulation has established a

Class II level of quality in the river. The JPA would like to see the quality lowered to Class III. Its request has never been acted upon, formally or informally.

DAME POINT BRIDGE

As Blount Island and private port development is manifest, rail and vehicular access will grow as a problem. The north bank of the St. Johns River is served by rail and highway. Rail access will probably be improved as demand is recognized. Highway access seems to be another matter.

At the present time, Hecksher Drive is the only access to Blount Island and intervening port-related developments from Interstate 95 and U.S. 17. This is a distance of 11 miles along a two-lane highway. U.S. 17 and Interstate 95 are the only arterial connectors to downtown Jacksonville, points north, points south, and points east of the river. From Blount Island to downtown Jacksonville it is approximately 19 miles. It is an additional distance for any commuter who may work at these developing facilities and the suburbs south and east of the river.

In 1960 a river crossing at Dame Point over Mill Cove connecting the south bank of the St. Johns River by high level bridge was proposed by the Florida State Road Department as a future need in the 1980's. Such a proposal has been supported by the Jacksonville Area Planning Board (Edward Mueller, Executive Director, Jacksonville Transportation Authority, personal communication, January, 1979), and transportation interests. The proposal is controversial.

Controversy surrounding this proposal seems to organize around two issues. The first and probably most complicated is environmental. This issue seems to relate to the potential hazards that could occur with regard to the Mill Cove marine system. The second relates to future sources of energy and transportation. No clear resolution of these matters seems close in the near future.

The second issue is associated with the port interests in the community and is focused on the need for U.S. Coast Guard permit. Ambivalence exists among maritime groups. On November 10, 1978 the *Journal of Commerce of Jacksonville* carried this story:

> For the first time the Jacksonville Port Authority, which had been neutral on the bridge controversy, came out with a public statement of qualified support for the bridge. The proposed Dame Point span would lie just upriver from the JPA Blount Island terminal but would lie downriver of its Tallyrand docks in downtown Jacksonville. While Blount Island ships would not have to pass under

the bridge, Tallyrand ships, currently unhindered by any bridge between Tallyrand docks and the ocean, would have to navigate under the bridge.

JPA Chairman C. Herman Terry told the Coast Guard that the authority supports construction of a Dame Point bridge because it feels it would enhance the development and transportation at the Blount Island terminal.

But the JPA "would strongly oppose construction of a bridge which would result in any restrictions by the Coast Guard on navigation," Mr. Terry said.

Even with the changes in design, the question of whether the bridge would be an undue hazard to navigation—one which could result in Coast Guard requirements of one-way traffic, special tide conditions or other restrictions as well as possible ship or barge collisions with the bridge—is still the crux of the disagreement between the Jacksonville Transportation Authority and maritime interests here.

The Dame Point Bridge controversy will continue for some time. It is a very important aspect of the future development of the Port of Jacksonville downriver from Tallyrand Terminals.

OFFSHORE POWER SYSTEMS

In 1972 the Jacksonville Port Authority (1972) reported:

Westinghouse-Tenneco's announcement that Blount Island would be the site for their Offshore Power Systems plant was the most significant and exciting event in 1972. . . . The manufacturing facility, described as a combination "shipyard and assembly line," will cover almost a square mile on the east end of Blount Island. Construction of the new plant should be completed by late 1976. It is expected to cost more than $200,000,000 and will create 10,000 production jobs.

With this exciting announcement Blount Island and Jacksonville seemed destined for yet another surge of port activity. However, due to a sinking market for nuclear power generation, especially offshore, by 1978 Offshore Power Systems was laying off most of its employees. At this time the future of the plant on Blount Island is obscured by many problems.

CONCLUDING OBSERVATIONS

The Port of Jacksonville has developed as a result of its hinterland influence and the interaction of economic, local, and national policies, and land and water resources. In this paper the authors have tried to qualitatively identify some of these aspects through two rather long periods of time. The sources of information available are not organized in such a way that interactive patterns clearly emerge. Therefore the

synthesis at times is spotty and certainly uneven; for this we seek indulgence.

It seems that Jacksonville is committed to long-term port development. Its land-use policies certainly are clearly articulated and the market and political forces are supportive. It must deal, however, with remaining environmental problems and future port development along the downriver reach from Trout River to Fulton Cut. It must also constructively deal with latent transportation and port issues. The Dame Point Bridge seems to be an essential element of this issue.

Given the land-use allocations to industry as illustrated in Figure 5, transportation becomes a major infrastructural problem. Jacksonville continues to have other infrastructural problems with waste water and sewer management. These unresolved problems can be devastating as the community seeks to increase the importance of the Port of Jacksonville.

Planning for Jacksonville's future seems to be institutionalized. It can be said, however, that if it took 3 years, from 1973 to 1976, to adopt a set of modest land-use goals and standards, the mechanisms of public policy making are not attuned to planning. Governance, though ostensibly consolidated, still remains disjoint and subject to independent policy-making bodies dealing with several functional areas.

Ports are very dependent on the urban host and local land and water resources. In addition, the Port of Jacksonville is vulnerable to national defense and energy policies. Its hinterland has largely become a market for foreign commodities rather than a producing partner with direct economic ties to the Port. Additional research and analysis are essential if we are to understand the sets of interactions that represent such urban and port-related phenomena.

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Waterfront Development and Change: Pensacola, Florida

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INTRODUCTION

The urban waterfront of Pensacola, Florida is rich in history and conflict. The Port of Pensacola is one of the nation's better natural harbors, with a natural depth of 22 feet and an excellent location (four times closer than Mobile and seven times closer than New Orleans) to Gulf shipping lanes. However, Pensacola has had a very long history of sporadic and fluctuating port development.

This paper examines Pensacola's current urban waterfront dilemma in three stages. First, a historical sketch of 400 years of urban waterfront development and redevelopment is presented. Second, factors currently limiting or constraining port development are examined. Third, the efforts of the community to resolve the current urban waterfront use conflicts are revisited, and some thoughts toward a holistic solution to the stifling problems are suggested.

The City of Pensacola is located in the extreme northwest corner of Florida as shown in Figure 1. Specifically, the City lies on the north shore of Pensacola Bay, 11 miles from the Gulf of Mexico, 60 miles from Mobile and 200 miles from New Orleans. The City has a 1976 population of 67,067 and a two-county metropolitan population of 274,943. Major employment activities include pulp, paper, and chemical industries (Bureau of Economic and Business Research 1977).

FOUR-HUNDRED YEARS OF PENSACOLA WATERFRONT DEVELOPMENT

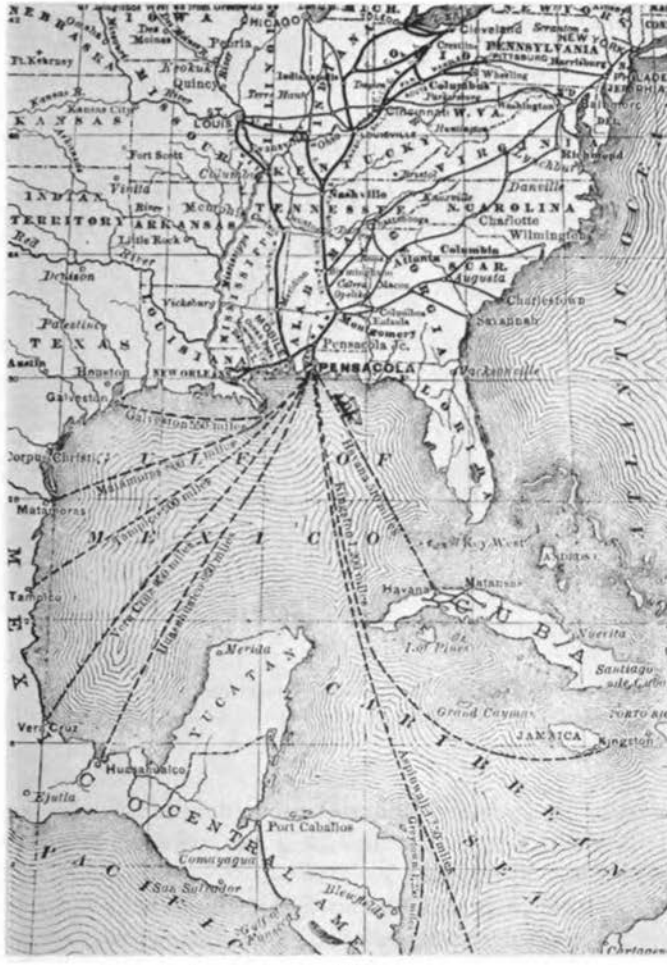
As the oldest port in the United States, Pensacola, Florida, makes an ideal case study through which to observe the dynamic force of technological change as America shifted from an economy based on renewable natural resources, such as wind and timber, to a more energy-intensive, fossil-fuel-based economy. Also a brief understanding of Pensacola's history helps one understand the strength of the historical district and its resistance to port expansion.

The first attempt to settle and colonize the Pensacola area began in 1558. The Spanish, in an effort to establish dominance over North America, sent Don Tristan de Luna with 13 vessels and 1500 soldiers, sailors, farmers, artisans, and slaves to Pensacola in 1559 (John Appleyard Agency 1976). Within days after the arrival of the ships, a hurricane hit the area killing about 200 people, destroying the fleet, and ruining most of the food and supplies. Although relief was provided by Don Angel Vallafane in 1562, the colony failed to prosper and was abandoned.

The second attempt to settle Pensacola occurred in 1698. Renewed interest in North America by the British and French prompted the Spanish, under Don Andreas de Arriola, to establish a military outpost in Pensacola. The outpost was small and repeatedly harassed by the French, British, and Indians. In 1719 the French, after having defeated the Spanish, proceeded to burn the town.

When peace was restored in 1722, the Spanish returned and made an attempt once again to establish a colony in the area. This time they built on Santa Rosa Island to avoid attack from the Indians or the British. This settlement lasted longer than any of the previous ones, but in 1752 it was destroyed by a hurricane. The survivors left the island and moved to the mainland and settled where the present City of Pensacola is located.

At the close of the French and Indian War in 1763, Pensacola became a British possession. For 20 years the City prospered and served as an important port between the New World and England. It was during this

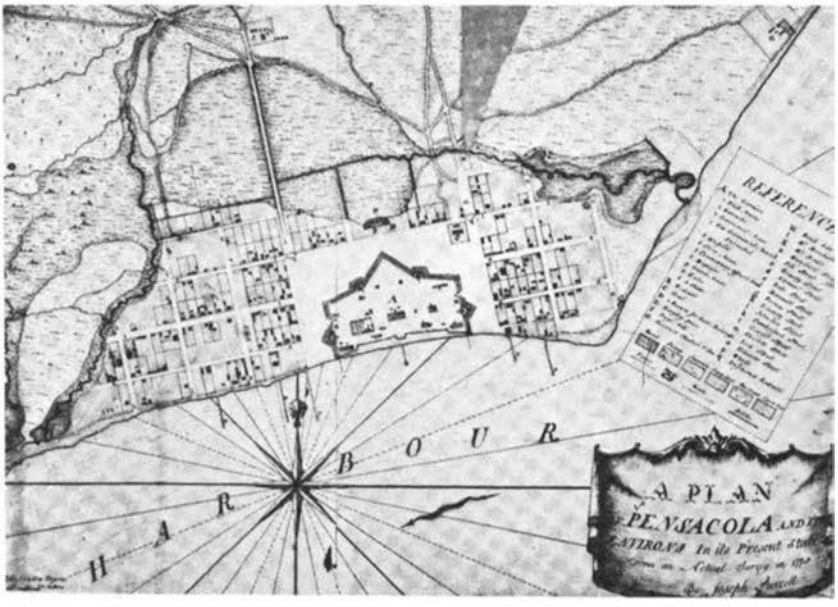


SOURCE: John Appleyard Agency (1976).

FIGURE 1 Promotional map used by Pensacola Port and L&N Railway, 1890.

period that British surveyors platted the Old City area and delineated the street system used today in the Historic District of the City. Elias Durnford's plan for the City is shown in Figure 2.

The loss of the Revolutionary War by the British resulted in the Spanish occupying Florida once again. Between 1783 and 1821 there were some unusual port developments. Three Scots traders established a



SOURCE: John Appleyard Agency (1976).

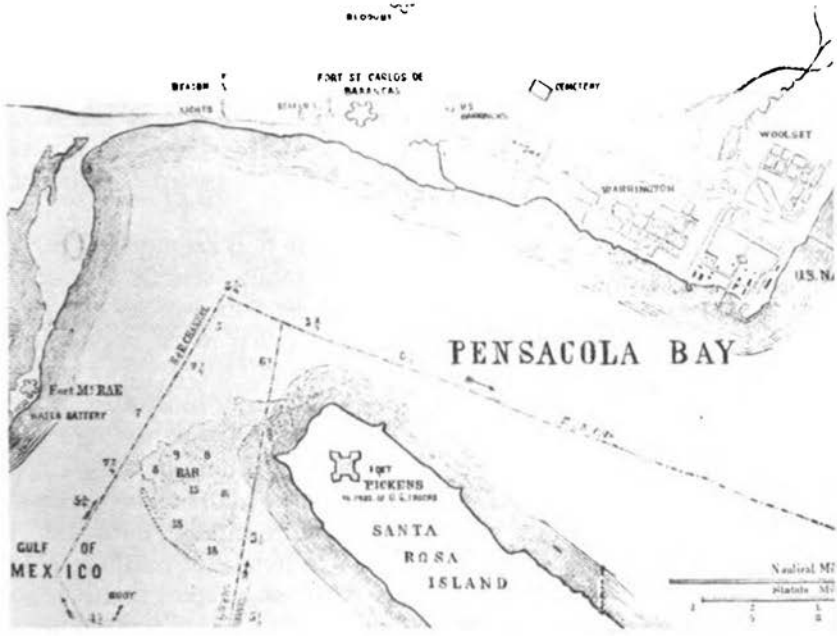
FIGURE 2 Durnford's 1770 Plan for Pensacola's waterfront.

very successful trade relationship with the Indians. The Indian trade provided the basis for a large flow of goods between Pensacola and London, Havana, and Nassau.

Spanish rule ended in 1821 when Florida became a United States territory. This resulted in a series of federal investments in several forts and a naval yard. The locations of these facilities are shown in Figure 3. The construction and operation of these federal installations resulted in a boom in the area during the 1830's. The military construction also resulted in the beginning of the lumber industry. To fully develop the lumber industry, a railroad was needed. A railroad was planned, but the Panic of 1837 thwarted all railroad construction plans.

A railroad that provided service between Pensacola and Mobile was operational by 1860. However, in 1861, with the start of the Civil War, the railroad was destroyed. By the end of the war, Pensacola was virtually a shell; many principal buildings were destroyed and the population was dispersed.

After the Civil War, Pensacola made a strong recovery due to the great



SOURCE: John Appleyard Agency (1976).

FIGURE 3 Map (1860) of Pensacola Bay highlighting United States Navy installations.

worldwide demand for lumber. During this period there was a large amount of construction in Western Europe but supplies of European lumber were dwindling. In the 20-year period from 1875 to 1895, over 4×10^9 board feet of lumber were cut and shipped out of Pensacola.

In 1882, the L&N Railroad completed construction of a line that connected Pensacola and Jacksonville. The L&N invested heavily in the Port with the construction of docks, warehouses, a coaling station, and a grain elevator. The presence of the railroad and its investment added to the lumber boom. By 1885 there were 16 wharves along a 3-mile strip in Pensacola. The level of activity was such that organized scheduling of vessels, harbor pilots, and workmen became necessary.

Statistics indicate that in 1882 the Port had a draft of 22 feet and serviced 662 ships, most of which received less than 1000 tons of cargo (U.S. Army Corps of Engineers 1886). This level of activity was maintained during the period from 1885 to 1913 by the lumber industry, the brief surge of activity during the Spanish American War, and the

possibility of a Panama Canal, and the subsequent opening of Pacific trade routes.

The end of the boom began in 1912 with unstable world conditions coupled with a United States recession. In addition, one of the large British buyers of lumber was unable to settle accounts and went bankrupt. These events, along with World War I, served to dampen world trade.

After the war, there was a modest recovery in port activity, but other ports in the region were growing faster, i.e., Mobile, New Orleans, and Jacksonville. Lumber, once the backbone of the Port, was no longer a significant trade item. Most of the available lumber in the region had been cut and no reforestation effort was undertaken.

During the 1920's, the harbor was dredged from 22 to 30 feet, and a new railroad was built in Pensacola (U.S. Army Corps of Engineers 1931). The Frisco System provided new access to markets in Mississippi, Alabama, Missouri, Texas, Kansas, Arkansas, Oklahoma, and Tennessee. The arrival of this rail system along with a devastating hurricane in 1926, which seriously damaged most of the 16 terminals, resulted in an immediate need for port improvements. A 237-page report made many recommendations for port modernization, but few improvements were made due to financial limitations. Soon afterward the depression set in and the already inadequate port facilities began to deteriorate even further due to poor maintenance.

There was little activity in the Port during the decade of the 1930's, and it was not until the start of World War II that the Port began to prosper due to the needs of coal and oil for shipping. The community, however, felt that the effects of the war would be short-lived and thus established a Port Authority in 1945. The purpose of this Authority was to improve economic activity through improvement of port facilities.

The first construction activity of the Port Authority began in 1954. It involved building a 6400-square-foot warehouse and a bulk-materials conveyor to meet the needs of the nitrate trade from Chile. Other activities of the Port Authority during the 1950's included the construction of another new 24,000-square-foot warehouse in 1955 and the purchase of additional land and facilities west of the present terminal from the Frisco Railroad.

The advances made by the Port Authority were balanced by a series of fires. In 1955 fire destroyed a wharf and the only coal tipple at the Port. The coal tipple was never replaced and the era of coal shipments via Pensacola abruptly ended. Three years later in 1958, a fire destroyed several warehouses and destroyed the bulk-materials conveyor system.

Increased port activity coupled with the 1958 fire prompted a

feasibility study of new terminal facilities. The study indicated a need for four new berths and two new warehouses; however, funds were not available. It was decided that only two new berths and one new 72,000-square-foot warehouse could be built (Coverdale and Colpitts 1959).

During the 1960's the Port had its ups and downs. Two major trade activities were in difficulty: the prosperous Cuban market closed down due to the Castro takeover, and the import automobile business collapsed due to the increased small-car manufacturing by U.S. automobile makers. Later in the decade the Frisco pier and warehouses were destroyed by fire.

On the positive side, two new berths and a warehouse were opened which helped stimulate port activity. Upon the opening of these facilities it was evident that more berths and warehouses were needed. Many shipowners complained that they could not afford to spend days at anchor awaiting a berth. Thus the Port once again made plans for expansion. Included were a 580-foot east-west expansion of the terminal, a 90,000-square-foot warehouse, and improvements to the truck and rail approaches. Once again the financing of these improvements was questionable. As a solution the Port Authority was incorporated and restructured into the municipal government of Pensacola. This allowed for the sale of the appropriate bonds to finance the port improvements (Frederick R. Harris 1969).

In the 1970's, the needed port improvements planned during the 1950's became reality; two new berths and a large warehouse were opened which greatly increased the capacity of the Port. Other additions to the Port during the decade included a new fuel-oil terminal, a new barge terminal, and a liquid-sulfur transfer facility. At the midpoint of the decade, oil and sulfur movements helped swell the tonnage handled at Pensacola to 1,183,943 tons (John Appleyard Agency 1976), the largest export tonnage handled since 1913.

The day is past when the economic future of the City is almost totally dependent upon port activities. However, the Port does play an important role in the City's economy with one out of every 10 jobs related in some way to the Port (John Appleyard Agency 1976). It appears that after 400 years of use, the Port of Pensacola is doing better than ever.

FACTORS LIMITING GROWTH OF PENSACOLA'S PORT

The analysis of the current use and conflict between the various types of urban waterfront development is organized around the critical issues currently limiting further growth and development of the Port. While

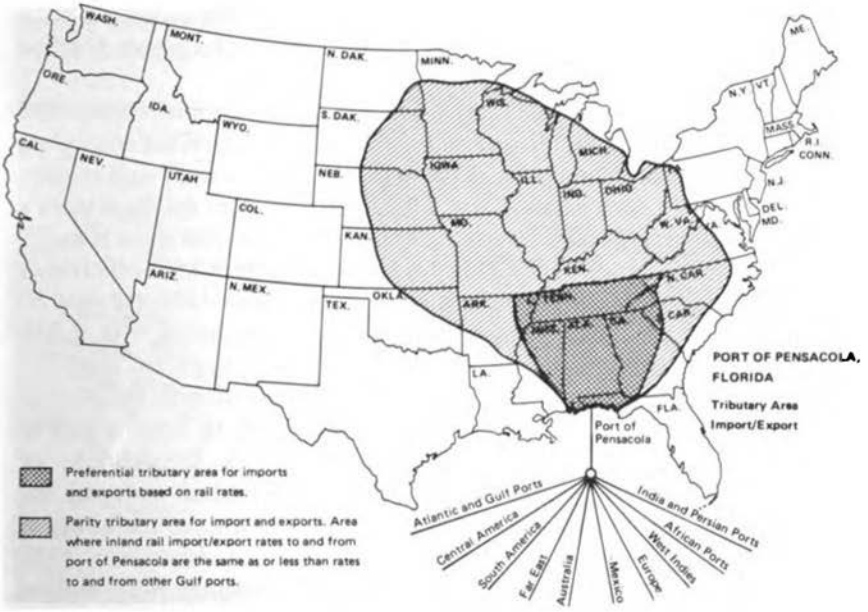
many factors are necessary for successful port operation, it is possible for one factor to limit the total activity of the Port. By examining such factors as regional competition, public policy, land and water access, terminal facilities, and natural and man-made disasters a holistic view of the current Pensacola dilemma can be developed.

REGIONAL COMPETITION

A maritime port's competitive position is determined by its location, cargo-handling facilities, rail and other transportation network, available labor force, and rate structure (Coverdale and Colpitts 1975). Pensacola must compete with Ports such as New Orleans, Mobile, and Tampa on the Gulf Coast and the Ports of Jacksonville and Savannah on the Atlantic Coast. However, Mobile, which is located only 40 miles away, is Pensacola's most formidable competition. In terms of location, Pensacola is located only 11 miles from the Gulf of Mexico, while Mobile is located 40 miles from the Gulf shipping channel. However, with respect to other factors, Mobile is far superior. Inland water transportation facilities at Mobile provide an extensive network for the barge traffic which is almost totally lacking in Pensacola. And while the rail network surrounding Pensacola is extensive, the severely limited urban waterfront space and the poor location of the rail lines serving the Port make large-scale rail activities impractical when compared to the Port of Mobile. With respect to cargo-handling facilities, Mobile is again far superior. The Port of Mobile, for instance, can accommodate vessels with drafts of up to 40 feet, compared to 33 feet at Pensacola. Mobile has specialized facilities such as mobile cranes to handle containers, grain elevators capable of loading 115,000 bushels per hour, a cold storage plant with a capacity of 500,000 cubic feet, and a rotary railroad car for unloading bulk ores (Coverdale and Colpitts 1975).

The major factor behind Mobile's superior facilities lies in the financial support received. The Port of Mobile is supported by the state of Alabama, while the Port of Pensacola is supported by the City of Pensacola. Thus while both Ports may be aware of needed improvements, only Mobile has the financial resources to undertake the improvements.

In understanding port growth potential some appreciation of the land transportation trade area is important. Figure 4 is a map originally produced by Frederick R. Harris, Inc. (1969) and modified by the Corps of Engineers in 1978 that shows the preferential tributary area for imports and exports based on rail rates. The map also shows the parity tributary area for inland rail.



SOURCE: Frederick R. Harris (1969), as modified by the U.S. Army Corps of Engineers.

FIGURE 4 Rail tributary area of imports and exports through Port of Pensacola.

From a regional perspective, the potential volume of trade available to the Port of Pensacola is many times greater than the volume currently being handled. The following parts of this section examine other possible constraints on the growth of Pensacola's Port in an effort to present an accurate picture of current waterfront conflicts.

PUBLIC POLICY

The founding fathers were aware of possible effects of public policy on port development to the extent that Article 1, Section 9 of the United States Constitution prohibited federal preferential treatment of ports of one state over another (Marcus 1977). In reviewing the current development of Port Pensacola, the only influential federal policy has been the National Environmental Policy Act. Pensacola is possibly more restrained by environmental legislation than ports in nearby states. The state of Florida aggressively enforces water quality standards in Pensacola Bay to the point of suing the Corps of Engineers in 1973. The

lawsuit resulted from a violation of pollution standards dealing with spoil disposal. To date this conflict is still unresolved (Pensacola Harbor and Waterways Task Force 1978).

The state policy in Florida with respect to port development is another significant factor in Port Pensacola's development. In 1976 Pensacola's tonnage amounted to only 2% of the state's total port trade and is only one of Florida's nine major Ports. Thus, state support for Pensacola's Port has been insignificant. In contrast, the situation in Alabama is much different. Mobile is Alabama's only Port and it is seen by state officials as being essential to the economic well-being of Alabama. Over the past 50 years the state has heavily invested in the Port, beginning with a $10 million investment to modernize facilities in 1929.

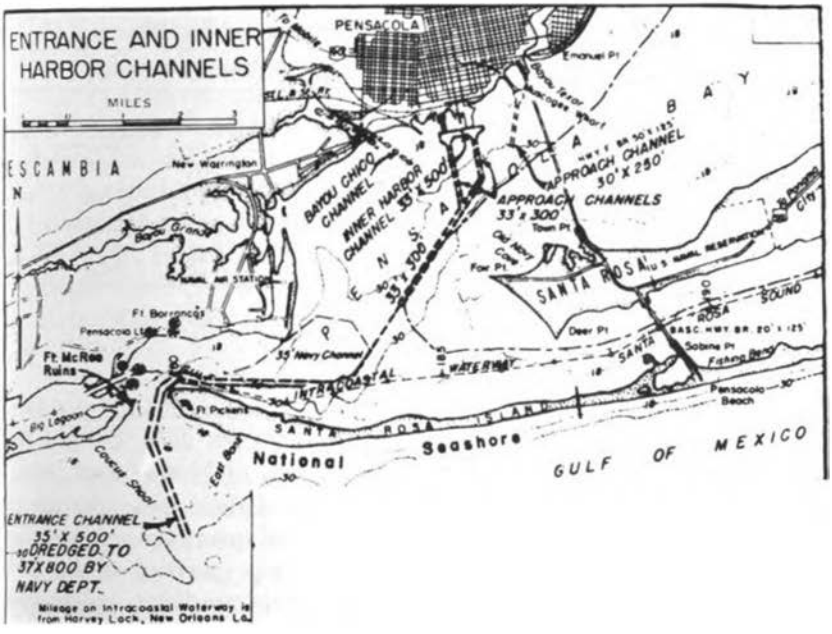
The Florida legislature provided some policy assistance to the Port of Pensacola by establishing a Port Authority in 1945 which became part of the City in 1966 and is currently in Pensacola's Department of Transportation. This proved to provide additional constraints on the Port's growth, for northwestern Florida is well known to be the home of many of Florida's fiscally conservative officials. For example, a 1959 feasibility study by Coverdale and Colpitts fully justified a $6 million modernization program. However only $3 million could be raised by the Port Authority, allowing for only half of the needed facilities (Coverdale and Colpitts 1959).

The underconceptualization created by the combination of a small public body in a fiscally conservative area helps to explain how Mobile, which is much further from Gulf shipping lanes, has grown much faster than Pensacola.

Possibly one of Pensacola's largest problems in the public policy realm is the disjointed planning effort. While the City has tried to comprehensively plan for the urban waterfront, there are currently many functional plans that are often in direct conflict with one another. The conflict and buck-passing between plans relating directly to the urban waterfront are reviewed later in this paper (Coverdale and Colpitts 1975, Frederick R. Harris 1969, Milo Smith 1973).

WATER TRANSPORTATION

The existing federal project for Pensacola Harbor provides for (1) a 35- by 500-foot entrance channel about 5 miles long, from the Gulf of Mexico to lower Pensacola Bay; (2) a 33- by 300-foot bay channel; (3) two 33- by 300-foot parallel approach channels to opposite ends of the inner-harbor channel; (4) an inner-harbor channel 500 feet wide, 33 feet deep, and 3,950 feet long; (5) a 30- by 250-foot approach channel to the



SOURCE: U.S. Army Corps of Engineers (1978).

FIGURE 5 U.S. Army Corps of Engineers current project in Pensacola Bay.

pier-head line south of the Muscogee wharf; and (6) a 15- by 100-foot entrance channel into Bayou Chico, then a channel 14 feet deep, 75 feet wide, and about 4,400 feet long to a turning basis 14 feet deep and 500 feet square. The existing project is illustrated in Figure 5 (U.S. Army Corps of Engineers 1978). Plans are currently underway to improve the project by increasing the channel depth to 42 feet as a solution to present water transport limits. However, the lack of a good spoil site in the urban waterfront area has prevented any dredging activity from occurring.

In the draft cost benefit analysis performed by the Office of the Mobile District Engineer benefits of deepening the channel are based on projected shipping of iron and steel scrap, crude petroleum, and residual fuel oil. A summarization of initial year (1977) accepted commerce volumes and the corresponding transportation benefits that would be realized from increasing channel dimensions at Pensacola Harbor is presented in Table 1. Total initial year tonnage is 1,097,800 tons (U.S. Army Corps of Engineers 1978).

General cargo vessels numbered 154, or 71% of the total deep-draft

TABLE 1 Summary of 1977 Initial Year Tonnage and Benefits

Commodity	1977 Volume (thousands of tons)	1977 Benefits (thousands of $)				
		34 ft	36 ft	38 ft	40 ft	42 ft
Residual fuel oil	265.0	–	–	61	95	95
Iron and steel scrap	70.0	86	$222	317	386	440
Crude petroleum	762.8	305	763	1,045	1,365	1,747
	1,097.8	391	$985	$1,423	1,846	2,282

SOURCE: U.S. Army Corps of Engineers (1978).

vessels. These vessels moved 367,471 tons or about 33% of the 1976 annual tonnage with a per-vessel average of 2,386 tons. Of the 154 general cargo vessels, 118 had registered drafts of 29 feet and above. However, no transportation benefits could be derived from the use of these larger vessels since they unloaded or loaded quantities representing substantially less than shipload volumes. A large portion of the 1976 general cargo commerce was in food and grain products which were shipped in small consignments under the United States Department of Agriculture regulated by Public Law 83-480, Food for Peace Program (U.S. Army Corps of Engineers 1978).

The Corps study documents considerable benefits to shippers if larger ships could be handled in Port Pensacola; however, as will be shown in the following sections, the constraints imposed by land transport problems and loading facilities are a far greater constraint. Currently other ports with similar channel depths handle much larger cargo volume due to improved shore facilities.

LAND TRANSPORTATION

From a regional view, the Pensacola Port is well served by the Louisville and Nashville (L&N) and by the St. Louis and San Francisco (Frisco) Railroads; however, the natural topography and limited space available in the City of Pensacola for rail transportation is of critical concern. Currently the main lines of the railroad connecting the Port must share space with congested city streets. Figure 6 illustrates the conflict between road and rail traffic on the urban Pensacola waterfront. Also, because of the topography near the Port, the L&N must switch incoming cars in the middle of town. The large number of grade crossings and mileage of shared right-of-way provides significant limits to the carrying capacity of

the railroad which may now be operating at near capacity because of this unusual conflict between transportation modes. The problem is so great that train access is restricted during business hours.

The road transportation system suffers from problems also, for when trains are servicing the Port truck connections are severely restricted. Until recently trucks have been virtually cut off from the Port by residential property, the Historic District, the City, and urban traffic. However, recent completion of Interstate 110, shown in Figure 6, to downtown Pensacola should provide some solution to limited truck access (Coverdale and Colpitts 1975).

TERMINAL FACILITIES

Possibly the most crucial problem the Port of Pensacola faces is extremely limited space on the urban waterfront. As shown on the general waterfront-use map in Figure 7, the Pensacola Historic District and Government Center abut the port facility directly to the north severely limiting the expansion of the Port. Several plans have been presented for moving the Port to alleviate the current space limits and urban congestion. However, there are no simple solutions, for relocation in Pensacola's case requires creation of new land by filling the bay. This is extremely costly and raises some serious environmental questions (Milo Smith 1973).

A diagram of the current terminal facilities is shown in Figure 8. Cargo arrives by rail and is unloaded in warehousing facilities to await loading and storing in barges and general cargo slips. Bulk commodities, such as liquid sulfur and petroleum, are pumped in and out by pipeline. For some years plans have existed for a containerized cargo system; however, with limited land and high initial capital costs, such a move would be questionable (John Appleyard Agency 1976).

NATURAL AND MAN-MADE DISASTERS

As previously pointed out the Pensacola urban waterfront has a 400-year history of devastation by hurricane, war, and fire. All three have limited port and city growth in several ways. After each of the many catastrophic setbacks, some or all of the individual firms have given up completely or relocated. Hence, what might have been a 400-year history of growth was actually a period of sporadic growth and setbacks (John Appleyard Agency 1976).

SOURCE: Coverdale and Colpitts (1975).

FIGURE 6 Map of rail lines through Pensacola's urban waterfront serving the Port. In the most congested waterfront area rails are down center of streets.

SOURCE: Milo Smith (1973).

FIGURE 7 Land-use map of Pensacola urban waterfront.

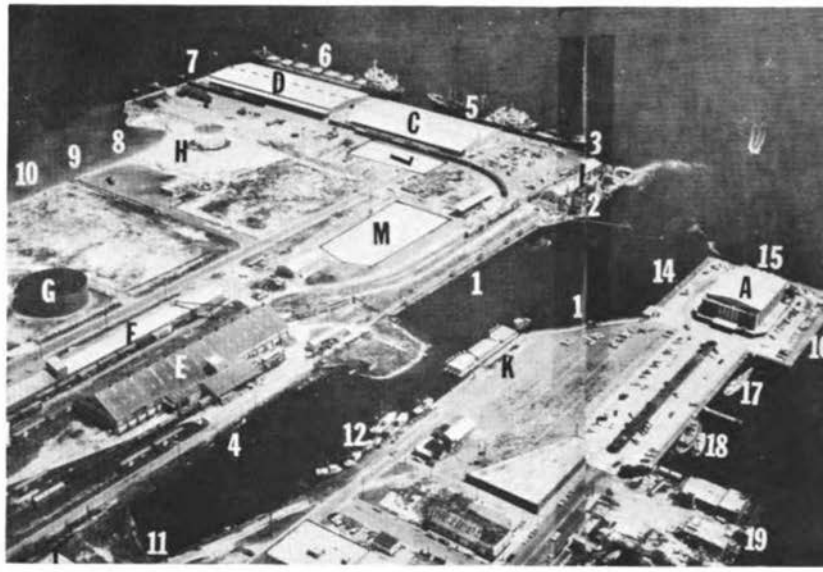
URBAN WATERFRONT PLANS

Pensacola has produced a series of plans to improve the general vitality of the urban waterfront and the Port over the last decade. Several local government agencies and three consultants have been involved in the planning process. This section reviews the unfolding concepts designed to revitalize downtown Pensacola, the Port, and the urban waterfront.

THE PORT OF PENSACOLA'S PLAN

The Pensacola Port Authority Long Range Planning Committee contracted with Frederick Harris, Inc., an international firm of consulting engineers, economists, and planners experienced in port planning and development, to produce a long-range plan for the Port of Pensacola. The Harris study (Frederick R. Harris 1969) summarized present port operations, commodity volumes, and handling requirements; projected future port commerce volume and necessary facilities and programs to handle the commerce; produced a program to develop the Port through 1990; and estimated the impact of these facilities on Pensacola's economy.

The recommendations made in the Harris study have been accepted by the Port Authority and have generally been implemented. However, the Harris Plan failed to properly estimate the potential conflicts



Facilities:

A. Pensacola Port Offices
B. Port of Pensacola Building No. 2
Open Lumber Warehouse
15,000 sq. ft.
C. Port of Pensacola Building No. 5
General Cargo Warehouse
72,000 sq. ft.
D. Port of Pensacola Building No. 6
General Cargo Warehouse
90,000 sq. ft.
E. Port of Pensacola Bulk Warehouse No. 4
45,800 sq. ft.
F. Port of Pensacola Bulk Warehouse No. 3
42,300 sq. ft.
G. Belcher Oil Company
H. Freeport Sulphur Co. Terminal
I. Port of Pensacola Bulk Oil Tanks
J. L&N Railroad Switching Yard
K. Palafox Street Wharf
L. Open Lumber Warehouse No. 7
15,000 sq. ft.
M. Port of Pensacola Building No. 1
General Cargo Warehouse
72,000 sq. ft.

Berths:

1. Bulk Pier—600 ft
fertilizers and liquid cargoes
Roll-on/Roll-off Ramp under
construction at north end
2. General Cargo—400 ft.
3. Lumber-Oil—425 ft.
4. LASH Barges—300 ft.
5. General Cargo—425 ft.
6. General Cargo—580 ft.
7. Barge Dock—500 ft.
8. Unused
9. Unused
10. Unused
11. Small Boat Dock
12. Barge Dock—500 ft.
13. Fishing Boats—300 ft.
14. Tugs-Navy Vessels—350 ft.
15. Unused
16. Barge Dock—350 ft.
17. Small Boats—200 ft.
18. Small Boats—200 ft.
19. Leased—Fishing Boats

FIGURE 8

between the Port's growth and the Historic District. Figure 9 is the Port master plan produced by Frederick R. Harris, Inc. (1969). This 1969 plan closely resembles current 1979 Port development.

THE CITY HAS A "BETTER IDEA"

Implementation of the Harris Plan resulted in a 10-fold increase in deep-draft shipping over the past decade which has significantly increased the conflict between urban waterfront uses. The increased shipping resulted in 10 times more rail cars running down the middle of the streets in the Historic District plus a growing Port that blocks waterfront visibility.

Thus to deal with these conflicts, a need to develop a Pensacola urban waterfront plan was recognized. Milo Smith, Inc., a Florida planning firm, was engaged to develop the plan as a basis for coordination of a series of previously prepared plans and studies including the Historic District, the Government Center, the Port, the quayside, Interstate 110, the Shoreline Parkway, and the Pensacola Urban Topics Study (Milo Smith 1973).

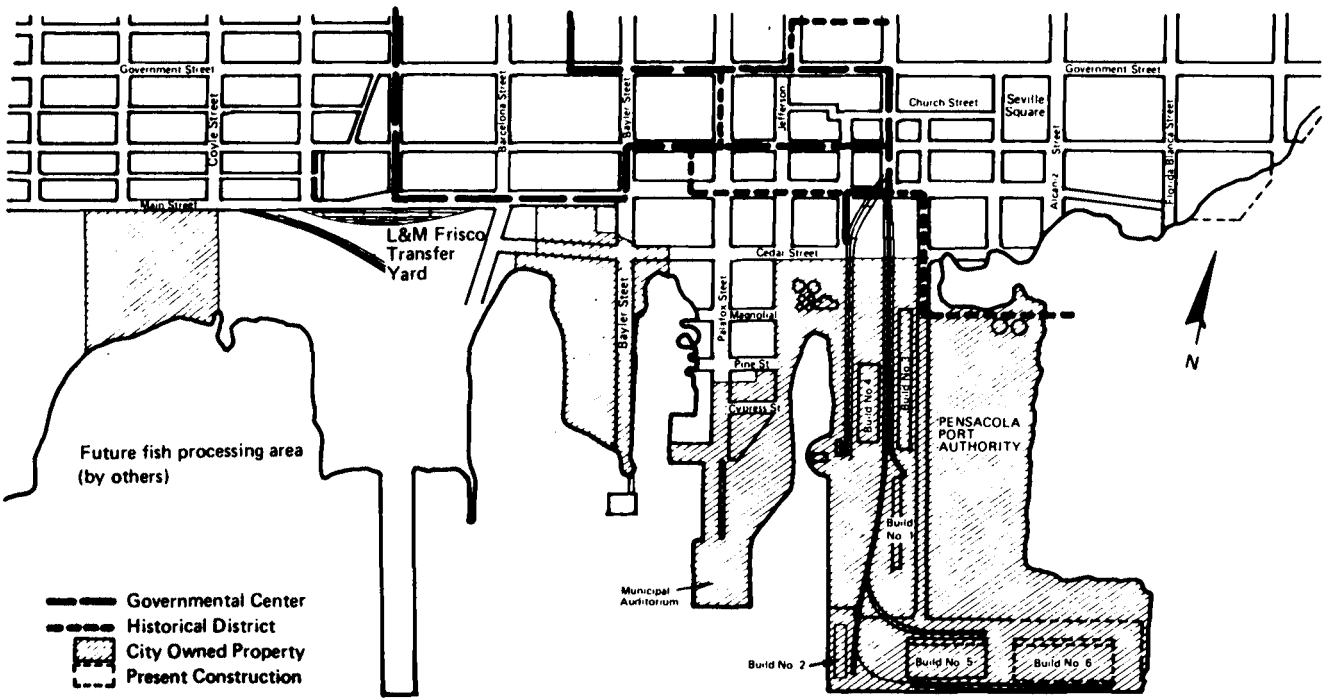
Realizing the conflict between the Port and efforts to revitalize the urban waterfront, the Milo Smith Plan recommended moving the Port a few blocks to the west. To the delight of the Historic District and Government Center planners, the present port site was to be converted to garden apartments and park space. Figure 10 is the 1973 Milo Smith Plan showing the proposed new port location.

While the problem seemed to be solved, the massive filling of the bay needed to implement the move involved trading a historic conflict for an environmental conflict. Also it was not clear how the Milo Smith Plan would alleviate the massive congestion generated by train and truck traffic in the urban waterfront area.

THE COST OF MOVING THE PORT

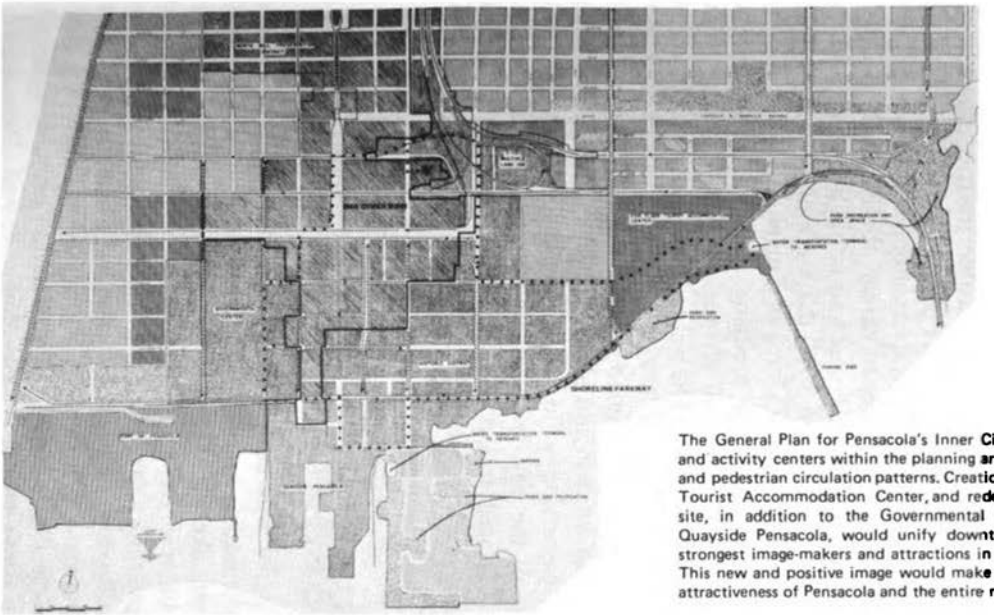
Anxious to alleviate the port-induced urban congestion and waterfront conflict, the City of Pensacola obtained the firm of Coverdale and Colpitts, Inc., to evaluate the idea of relocating the Port as proposed by Milo Smith. Figure 10 is the relocation plan that was analyzed. The study shows moving the Port to be economically infeasible with a capital cost of $25 million, or roughly four times the port revenue. It was also found that the existing port site is capable of handling greatly increased volumes of cargo and also capable of being expanded through landfill to the east.

The study goes on to recommend improvement and expansion of



SOURCE: Frederick R. Harris (1969).

FIGURE 9 Port of Pensacola layout.



The General Plan for Pensacola's Inner City sets forth the major land use and activity centers within the planning area as well as the overall vehicular and pedestrian circulation patterns. Creation of the Palafox Mall, Five Flags Tourist Accommodation Center, and redevelopment of the existing port site, in addition to the Governmental Center, Historical District, and Quayside Pensacola, would unify downtown Pensacola into one of the strongest image-makers and attractions in the Southeastern United States. This new and positive image would make an unlimited contribution to the attractiveness of Pensacola and the entire region.

----- INNER CITY PLANNING STUDY AREA
WATER
STREETS
RAILROAD

RESIDENTIAL
ONE AND TWO FAMILY DWELLINGS
APARTMENTS AND CLUSTER HOUSING
CLUSTER AND HIGHRISE DEVELOPMENT
PUBLIC AND SEMI-PUBLIC

COMMERCIAL
TOURIST ORIENTED
PROFESSIONAL OFFICES AND SERVICES
RETAIL GOODS AND SERVICES
MANUFACTURING, WHOLESALE, AND STORAGE

DETAILED TREATMENT AREAS
FIVE FLAGS TOURIST ACCOMMODATION CENTER
PORT OF PENSACOLA
FIXED SURFACE TRANSPORTATION ROUTE

DOWNTOWN AREA TRANSPORTATION TRANSFER POINT
MAJOR STREETS
ARTERIAL
COLLECTION

SOURCE: Milo Smith (1973).

FIGURE 10 General plan of the Inner City Planning Study Area, Pensacola, Florida.

existing facilities to the margin of the Historic District. As noted on the map in Figure 11, the expansion and fill to the east directly conflicts with the Historic District's view of Pensacola Bay and further aggravates the potential for truck and rail traffic congestion in the Historic District. The Coverdale and Colpitts study suggested that rail and truck congestion could be eliminated by relocation of rail right-of-way and truck routes. However, how this is to be accomplished was not clear (Coverdale and Colpitts 1975).

PLANS COME FULL CIRCLE

Having found relocation not economically feasible, the City of Pensacola formed a Harbors and Waterways Task Force, made up of influential Pensacola citizens, with the clear intent on economic expansion of port-based trade and facilities. As mentioned earlier, the Port is in constant conflict between the environmental constraints on dredging and the historical preservation concerns. In 1973 the State of Florida Department of Pollution Control sued the Corps of Engineers for violation of pollution standards in maintenance dredging activities. This problem, which has halted maintenance of all channels and the turning basin, stems from the lack of a spoil site. The only alternative site for spoil, as shown in Figure 11, is in Pensacola Bay directly east of the present port facility. This may solve the environmental problems, but flies directly in the face of the earlier downtown and Historic District plans. Such filling and eventual port expansion is in direct conflict with the Historic District's visual use of the bay. Interestingly enough, the Harbors and Waterways Deep Channel report of May 1979 completely fails to mention the fact that the new spoil site is directly between the bay and the Historic District.

TOWARD A SOLUTION TO PENSACOLA'S URBAN WATERFRONT CONFLICT

This background paper was designed to aid in developing a realistic understanding of Pensacola's urban waterfront history, conflicts, and constraints. It is quite likely that the conflicts between urban waterfront usage will never be resolved until historic, environmental, and port development groups learn to work and plan together. None of the plans reviewed realistically considers problems other than its own. For example, the Government Center and Historic District planners had a simple solution to the Port—move it. This was not only economically infeasible, but was administratively unworkable as well. How was the

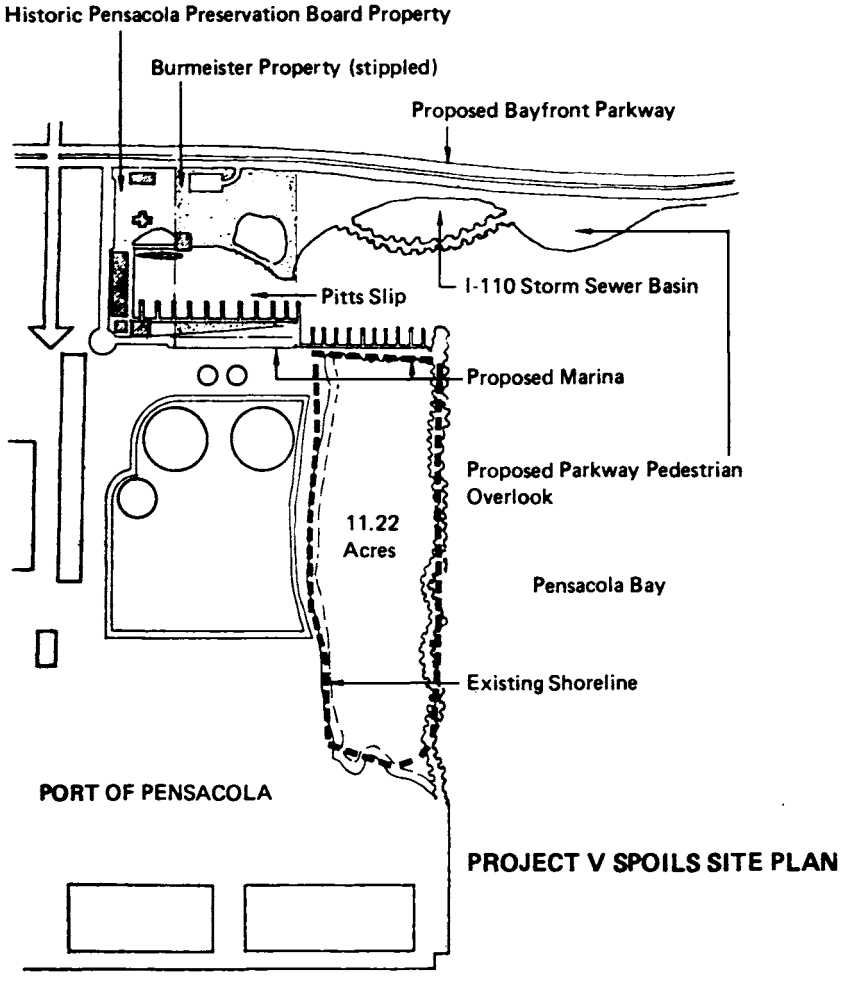


FIGURE 11 Pensacola Harbors and Waterways Task Force proposed spoil site.

Port of Pensacola ever going to get permission from the state of Florida to fill Pensacola Bay when permits for channel maintenance have been denied? The Port Development Task Force solution was equally unpalatable, for the last thing the Government Center and Historic District wanted to see was the expansion of the Port between the Historic District and the bay.

Possibly the urban waterfront's most serious problem is not its downtown location, but rather congestion created by rail and truck

traffic on downtown streets. This problem was never realistically addressed in any of the current plans reviewed.

DEVELOPMENT OF AN INTEGRATED PUBLIC POLICY AND PLAN

No workable solution to the urban waterfront conflicts has emerged in 10 years of planning by any of the special interest groups in Pensacola. Possibly it is time to make consolidated effort to develop a public urban waterfront planning process that can realistically assess the existing constraints and represent or incorporate the special needs of the port development, historic, environmental, and transportation groups into one workable and feasible plan.

A MULTIMODAL SOLUTION

Unfortunately neither Florida nor the United States has a dynamic Department of Transportation. Both have no more than a partially reformed road department. In the authors' opinion the most workable solution would have been a multimodal design for the recently completed Interstate 100 spur into the Port of Pensacola. Providing interstate access at the port terminal would have easily linked the road and water transportation networks. The multimodal use of the interstate median by rail with marshalling yards north of the City would have provided a truly integrated road, port, and rail transportation system. This would have virtually eliminated current waterfront congestion generated by trucks and trains. Granted this would have been slightly more costly than the Interstate 110 spur under final stages of construction, but it would have produced large benefits in the long run. This also would have provided a solution to the environmental problem of spoil removal. A good rail connection might be suitable for moving spoil inland for disposal. As for limited port space, an inland marshalling yard would greatly ease the current need for switching and marshalling of train cars at the Port.

Additionally the ability to move train cars in freely at any time of the day would greatly enhance the feasibility of using bulk-loading facilities and containerized cargo-handling equipment not currently feasible in such a constrained port.

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The Impact of Changes in Transportation Technology on the Use of Land in Harbor Areas

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PAUL O. ROBERTS
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BACKGROUND

Many potential uses compete for urban waterfront property. This paper deals with only one such use—transportation. Changes in transportation technology, both in the recent past and predicted for the future, are described in terms of their impact on land usage in general and the impact on urban waterfront property in particular. The following discussion is organized in terms of the three types of categories of goods moved by transportation: general cargo (i.e., manufactured or semimanufactured goods), bulk cargoes, and passengers.

GENERAL CARGO

Historically, in the international movement of general cargo, the goods had to be handled four times: once at the origin, once at the destination, and twice as it was loaded onto and unloaded from the ocean-going ship. This handling was expensive to perform, exposed the cargo to pilferage, loss and damage, and frequently involved exposure to the elements as well.

THE CONTAINER REVOLUTION

The advent of containerization almost eliminated the two handlings required at shipside. Or, rather, it transformed the cargo handling from a

complicated and expensive "hand-sort and place" operation to an almost completely mechanized one. Loading and unloading productivity went from figures of approximately 10 to 25 tons per hour per gang to about 250 to 600 tons per hour per gang, more than a tenfold increase. It did involve expensive equipment, but the productivity gains far exceeded the capital costs. Ship ownership and crew costs were saved since these ships now spent approximately 20 percent of their time in port being loaded and unloaded rather than about 50 percent of the time as break-bulk vessels; consequently, the containership could productively spend more time in trade. The result was a dramatic shift in the industry from "break-bulk" operations to the present highly containerized state.

The "container revolution" also had a significant impact on port facilities and usage of urban waterfront property. While a break-bulk cargo vessel needed only a few acres of waterfront property in the form of a wooden pier and a small warehouse, a single containership berth typically requires between 12 to 30 acres of land for sorting and stacking purposes. This huge change in waterfront requirements is due to many factors. First, the cargo handling rate for containers allows for significant economies of scale in the size of containerships; consequently, these vessels tend to be much larger than the break-bulk cargo vessels. Second, because of the high capital investment in ships and containers, the containership owner tries to minimize the number of port calls per round trip; therefore, rather than stopping at both large and small ports like a typical break-bulk cargo vessel, a containership calls at only a small number of major ports which attempt to act as "load centers" funneling cargo between a large inland hinterland and the port. As a result the amount of cargo being loaded and unloaded at a single port call is considerably greater with a containership than with a break-bulk cargo vessel.

Third, a break-bulk cargo vessel typically spent several days at each port; consequently, cargo could still be arriving at the port days after the ship was docked, and similarly cargo unloaded from the ship could be taken out of the dock area during the several days the ship was docked. In contrast, a typical containership stays on the order of 18 to 36 hours docked at the terminal. Therefore, the port marshalling and storage area must have enough room to handle all the cargo that will be loaded and unloaded for each containership arrival. (An exception exists in the Canadian Ports of St. John and Halifax where almost all the cargo exits the port by rail. The system of unit trains leaving the port is so efficient that most of the containers to be shipped out by rail leave the port area before the ship leaves the dock.)

For the reason stated above, port directors fondly dream of building

new container terminals of a couple of hundred acres in size. Sea Land, which initiated the first regularly scheduled fully cellular containership service in international trade in 1966, did manage to build a container terminal of this size in reclaimed marshland in New Jersey. Siting new container terminals outside the inner city typically makes the property less expensive and also generally provides for better road access, an important feature considering the large truck movements involved.

The construction of container terminals during the last decade has resulted in an overcapacity of port facilities when viewed from a national perspective. Nevertheless, rising cargo volumes, more container penetration on less developed trade routes, and the competitive nature of U.S. ports will cause further construction in the future. While the amount of waterfront area used by a container terminal may not be much different from the amount of land needed to move the same amount of cargo annually through many small break-bulk cargo terminals, the key difference is that the container terminal requires the use of many acres all at the same location. Similarly, the general cargo traffic must now funnel into a small number of large container terminals rather than being dispersed to a much larger number of smaller break-bulk cargo terminals.

ROLL-ON ROLL-OFF VESSELS

In addition to fully cellular containerships, another efficient type of vessel is the roll-on roll-off or ro-ro vessel. As the name implies, ramps are provided to handle a variety of wheeled vehicles and equipment. A few thousand cars can be unloaded in a number of hours. As with the containership, the terminal area must be able to handle a large amount of cargo in a small amount of time. Even livestock carriers have become large and efficient. Vessels capable of carrying 33,000 sheep also have need of specialized shore facilities. (Such ships are apparently referred to as walk-on walk-off or wa-wa vessels.)

Another way to unitize cargo is to place it in barges or lighters rather than containers. The barges are floated into position at the stern of the "mother ship" and then loaded aboard. The use of barge-carrying vessels such as the Sea Barge Clipper and LASH (Lighter Aboard Ship) designs, means that these huge amounts of marshalling area are not necessarily needed at the vessel docking area since the barges' contents can be loaded or unloaded at a variety of waterfront locations. (In fact the "mother ship" can actually handle its cargo while moored in the harbor rather than at a dock.) Nevertheless, although large amounts of backup land may not be essential, major ports receiving barge-carrying vessels

try to have a concentrated area where they can handle 30 to 100 floating barges at once.

LAND TRANSPORTATION

One question that arises is: Why has this containerization not "come ashore" to a greater extent in the railroad and trucking industry? The reason probably has to do with the fact that there is no major break-bulk operation to be eliminated in railroads or in truckload trucking. Here, a railcar or truck semitrailer can be loaded directly from origin to destination without intermediate stripping and repacking. Rail operations involve intermediate handling in the form of classification yards, but this is in no way comparable to the costs of break-bulk handling of oceanborne goods at the seaports.

There is break-bulk handling of trucking movements by less-than-truckload common carriers, and this may eventually lead to containerization of a portion of this industry; but there are trade offs between the size of the container, the amount of goods moving between a particular origin and destination, and the size and shape of the individual shipments and the density to which they can be packed. A system of nested containers would reduce the costs of handling at break-bulk terminals, but they would reduce the overall payloads and load factors and would involve the capital costs associated with container ownership and the costs for their management and maintenance. At the right set of labor-versus-capital costs, this form of containerization might well spring up.

Another form of containerization is that found in rail piggyback operations. Where consolidation of containers (in this case highway semitrailers) and direct line haul in large numbers can lead to substantial savings, piggyback operations can be profitable. The key to the success of these services is the ability to assemble a large number of trailers between markets that can be served directly without intermediate handling, since there are real economies of scale in the rail line haul operations if this saving is not dissipated through switching, high loading and unloading costs, or inefficiencies caused by directionally out-of-balance movements. To some extent, railroads have been frustrated by regulation from operating the needed trucking consolidation of loads within suitably large hinterland areas. Deregulation of rail would eliminate these barriers and leave only the technological problems of developing very efficient trailer loading and unloading operations and the institutional problems of providing a very high level of service at low overall capital and labor costs.

The growth of land-bridge and mini-bridge operations of railroads is testimony to the impacts that ocean containerization of freight is having on land transportation operations by rail. Land-bridge service refers to an operation whereby cargo moves between an origin and a destination such as Europe and Japan with a transcontinental U.S. rail movement in the middle. Such a rail movement potentially can decrease the total transit time relative to an all-water route but adds two extra cargo-handling operations. The mini-land-bridge or mini-bridge service has been a more economical operation. In this situation the cargo either originates or terminates at one coast in the U.S., thus requiring only one additional cargo handling relative to the all-water route. A popular mini-bridge movement carries cargo from Japan to the U.S. West Coast by containership and then to the U.S. Atlantic East Coast or Gulf Coast by container trains. The concentration of container traffic through fewer ports tends to reinforce the ability of rail to offer services that are competitive with truck or all-water movement in the case of mini-bridge; in addition, it increases the demand for land-bridge operations as service levels and rates continue to improve by rail.

Major restructuring of the rail industry now appears increasingly likely. Both mergers and rail deregulation would tend to have a positive effect toward the provision of unit container train operations by promoting end-to-end services and unified moves hopefully under a single (nongovernmental) management organization.

The net effect appears to be a number of forces all pushing toward more containerization. Further containerization seems bound to increase the land involved in transportation services since containers need space for storage and classification. Piggyback, as one form of containerization, is just as land-hungry as containers, though it may be possible to reduce the size or location of the classification operations. There will be, however, fewer ports involved in these operations.

AIR CARGO

All-cargo Boeing 747's can now carry up to 130 tons of freight in a single movement. While this is quite an accomplishment for a commercial airplane, it is miniscule relative to a modern containership with a 2,500-TEU (20-foot equivalent units) capacity, where one 20-foot container typically carries on the order of 10 tons. Although the airlines will divert small amounts of cargo from containerships, they will have no significant effect on the amount of seaport facilities needed. In addition, air cargo movements are not expected to lead to the construction of new airports in waterfront areas, although existing airports may be slightly enlarged in

some cases to make better use of increasing amounts of airfreight. Presently all-cargo freighters are modified versions of passenger aircraft; this situation is expected to continue in the future. The section on passenger movements will contain further information on future aircraft and their impact on waterfront property.

BULK COMMODITIES

Transocean movements of bulk commodities can be broken down into three categories: liquid bulk (e.g., oil), dry bulk (e.g., coal, grain), and liquefied gases (e.g., liquefied natural gas, liquefied petroleum gas). The single bulk commodity moving in the largest volume, by far, is crude oil. At the other extreme, the total oceanborne carriage of liquefied gases is relatively small; however, these substances have interesting relevance to port development because of their potentially hazardous nature.

LIQUID BULK

There is a large variety of liquid bulk commodities including molasses, wine, beer, sulfur, and acids. However, crude oil and petroleum products make up the majority of the tonnage of liquid bulk commodities in oceanborne carriage. The most startling change in oil transportation since World War II has been the amazing increase in vessel size. While the T-2 tanker of approximately 16,600 deadweight (dwt) tons capacity was the workhorse of the 1940's, the first 150,000 dwt tanker went into operation in 1966 and now we have tankers in excess of 500,000 dwt. (A tanker in the 200,000 dwt range is sometimes called a VLCC, very large crude carrier, while one in the 400,000 dwt range is referred to as a ULCC, ultra large crude carrier.) These huge tankers place unusual demands on port facilities. First, the port area must have sufficient water depth; approximately 100 feet is desirable. Second, the port facilities must be connected directly to a storage tank farm capable of storing the entire contents of the vessel. Third, the storage facility must allow distribution, typically by pipelines, to petrochemical facilities that can use the oil.

At the present time the United States is the only major industrialized nation not able to take advantage of receiving fully loaded VLCCs. The U.S. Atlantic and Gulf coasts are restricted to harbors with 40 to 50 feet of water depth. However, in the next year or two an offshore single point mooring (SPM) system will come into operation off the Louisiana coast. Texas is also actively pursuing the planning of an offshore oil terminal. In addition many other states have considered deepwater facilities but typically have not proceeded on environmental grounds.

The use of huge tankers requires large amounts of land for storage tanks and petrochemical activities. However, this property does not have to be located on the waterfront. Since the offshore terminal typically requires several miles of pipeline to bring the oil from the vessel mooring to the shore, there is no technical or economic reason to prohibit several more miles of pipeline to an inland tank farm. The waterfront might contain area for only the pipelines, probably a pumping and control station, and possibly a small buffer storage tank. Ports not served directly by supertankers would generally be served by small shuttle vessels or pipelines.

DRY BULK

While vessels carrying dry bulk commodities, such as coal, grain, and iron ore, have increased in size since World War II, the change in size has not been nearly as dramatic as with oil tankers. While dry bulk carriers in the 200,000 dwt size range exist, the mainstay of the fleet is under 80,000 dwt. Many factors keep dry bulk vessels from becoming as large as ULCCs. First, the tonnage of cargo moving in dry bulk trades is not as large as in the oil trades. Second, the cargo-handling rate for dry bulk commodities is not nearly as high as for liquid bulk commodities, which can be pumped. (A partial exception exists on the Great Lakes where self-unloading dry bulk carriers are used.) Therefore, the economies of scale in terms of vessel operations that exist in tankers do not occur to the same extent with dry bulk carriers since they are limited by port time. (Although technology permits pumping certain dry bulk commodities in slurry form, with few exceptions this has not caught on with dry bulk carriers.)

Third, building a deepwater terminal for dry bulk carriers generally requires construction of an offshore island; consequently, it is far more expensive than building an SPM for a supertanker. Nevertheless, a small number of deepwater ports for dry bulk carriers have been proposed. An offshore island off Delaware was studied for handling coal. The Texas ports of Galveston and Corpus Christi are still considering massive dredging projects to permit the use of huge dry bulk carriers. In general, it appears that cost as well as environmental factors will be major deterrents in constructing deepwater facilities for dry bulk carriers. Fourth, the tradition of buying dry bulk commodities in small lot sizes in transactions involving a number of parties seems difficult to change. In contrast, oil sales transactions, where the producer, the buyer, the seller, and the transporter may all be part of the same oil conglomerate, are more easily altered.

In conclusion, while oceanborne dry bulk commodity movements are expected to grow in the future, they will not have a dramatic impact on urban waterfront property.

LIQUEFIED GASES

While there are approximately 26 liquefied gases that move in oceanborne commerce, there are only a few that have the potential to affect port development. They are liquefied natural gas (LNG), which consists mainly of methane, and liquefied petroleum gas (LPG), which consists mainly of propane and butane. Although U.S. LPG movements are forecast to grow, this cargo will generally move through existing facilities. (However, some existing terminals may undergo modifications.)

On the other hand, if U.S. federal policies allow approval of new LNG importation projects, new marine terminals must be constructed. Because of public concern for the potential hazards involved with LNG, recent terminals proposed or constructed have typically been 200 to 1000 acres in size. It is highly unlikely that such a facility would be built in an urban area. In addition to cost factors, safety considerations would dictate a less densely populated region. Another alternative location for a new LNG terminal is to build it offshore. The state of California is presently analyzing this possibility. In such a situation, the product would generally cross the shoreline in gaseous form within pipelines. While shore facilities might be needed for a pumping station or to supply the offshore terminal, these would only require a minimum of waterfront property.

PASSENGERS

Waterborne movement of passengers has greatly declined since World War II. The only exceptions are cruise ships and some ferry services, neither of which have a significant impact on urban waterfront property.

Future growth in airline passengers is expected to continue, although the annual growth rate will not be as high as the 15 percent experienced in much of the post-World War II period. The last three decades have seen the introduction of jet aircraft and ever larger and—until recently—ever noisier airplanes. While the size of the individual aircraft did not require a larger airport, the number of plane movements and the noise level resulted in the construction of larger airports, such as those in Montreal, Paris, and the Fort Worth-Dallas area. The newest airports have not been located on the waterfront, probably due to the high cost of

shorefront property. Offshore airports have been proposed but no serious attempt has been undertaken to build such a facility due to the very high costs.

Future developments in aviation technology could have a direct influence on airport requirements. For example, in order to keep operating costs at reasonable levels, the introduction of 750-seat aircraft is a possibility by the end of this century. In the late 1960's air space congestion caused unacceptable delays at major airports around the world. However, the introduction of wide body aircraft helped to relieve this pressure temporarily and the use of even larger aircraft in the future will reduce the need to increase frequency to meet the demand.

Although each successive development has led to an increase in the size of aircraft and the trend is expected to continue in the near future, it is doubtful that the size will go beyond 750 passengers if for no other reason than the compatibility with existing or slightly expanded airports. Most of the present airports cannot accommodate aircraft much larger than the B-747 (fuselage length and wingspan) from the viewpoint of spatial and ground maneuvering problems.

DRAMATIC POTENTIAL DEVELOPMENTS

Considering the unique potential of nuclear-powered airplanes (virtually unlimited range and endurance), there is interest in examining the feasibility of nuclear-powered airplane-glider combinations (i.e., the nuclear tug). The idea is to use a nuclear airplane as a towing airplane for the cruise portion of a long-range flight; the towed airplanes would operate independently in all other portions of the mission. For economic reasons, the tug would remain aloft for extended periods. If this aircraft is configured as a seaplane, it would therefore be constrained to operate over water—a desirable feature from the point of view of reactor crash protection. The development of such aircraft would require the use of coastal airports. However, environmental considerations make the development of the nuclear tug unlikely.

Another dramatic advanced-technology concept under study is the aerial relay transportation system (ARTS), which, if developed, will not only reduce operating costs but also substantially relieve airport congestion. The basic mission of the ARTS design is to make an in-flight transfer of passengers, cargo, fuel, and crew. In addition to providing superior performance, such a system would reduce airport transfer requirements and in turn the need to expand present airports or develop new airports in the near future. The system would consist of large continuously flying liners along well-defined paths. A liner is a system of

airplanes in a modular form where each module can take off and climb as an individual airplane and link up with the other modules in cruise. These liners would operate in conjunction with smaller "feeders." The latter can dock with the liner to transfer passengers and cargo through the nose. The in-flight transfer feature of the ARTS will eliminate the need for some airport functions, resulting in roughly a 50 percent reduction in total airport traffic.

In commercial air transportation, the next 20 years promise to continue the revolution of the last 20 years. Although there are many factors that will stimulate and constrain the air transportation system, airport congestion appears to be a critical constraint, particularly with respect to the major metropolitan areas. Considering the increasing values of land necessary to expand the present airports or build new ones, the noise problems associated with a good part of the present fleet, and the continuously deteriorating ground transportation system, one option may be to use water-based aircraft. The concept is not new or infeasible considering the geographic location of a large number of hub cities on waterways and lakes. Furthermore, advanced technology, particularly in the area of materials and coatings, has produced substantial improvements in airframe design to protect the aircraft from environmental hazards such as salt water. Nevertheless, in addition to the economic problems of developing such aircraft, wide usage of such planes would also cause congestion problems in port areas.

V/STOL AIRCRAFT

The problem of short-haul traffic, although considered many times in the past, is still unresolved. About half of the total domestic passenger traffic is still within 500 miles of the point of origin. In addition, these passengers tend to be business people traveling during peak periods experiencing significant delays on the ground and in the air. The use of vertical and short take-off and landing aircraft (V/STOL) to relocate much of this traffic to more compatible urban STOLports has been considered many times; and each time this solution has been rejected for two basic reasons. The first reason is environmental (aircraft noise). The second reason is the excessive cost of the system. Although aviation technology is available to build environmentally acceptable V/STOL aircraft, their high development cost, together with the extremely high costs of urban land and aviation fuel, would result in relatively high passenger fares. The development of urban STOLports to relieve the current congested airports in the next 20 years is unrealistic due mostly to the heightened concern for the environment.

SUPERSONIC TRANSPORT

The technology to develop a second-generation SST is available. However, one must question the economics of the SST operations given the high price of fuel and the small quantities of fleet required to serve the market. In addition to the considerations of economics, the implementation of SSTs pose some severe problems from the point of view of the airports. With the exception of a few of the large, recently developed airports, most of the existing airports may not be able to accommodate the second-generation SSTs, primarily due to the length of the fuselage. In order to accommodate around 300 passengers within a narrow-body configuration, the fuselage would exceed the length of a B-747 by a large amount. The size would represent a major problem from the point of view of maneuvering on the ground; therefore the aircraft would be incompatible with the other subsonic fleet and could require expansion of present airport facilities or the development of new airports, both of which are highly unlikely given the present trend.

PASSENGER TRAVEL CONCLUSIONS

In conclusion, the technological advances in aviation are expected to continue well into the 21st century and will help considerably in relieving the constraints on airport congestion. The size of the conventional subsonic jet aircraft will increase due to its favorable economics. The larger size will also relieve some of the airport congestion. However, increases over 750 passenger capacity seem unlikely, since the associated airplane dimensions (fuselage and wingspan) would be too large to be acceptable at the present airports. Similarly, the second-generation SST may not be compatible with the present airport facilities, not to mention the relatively high operating costs.

The V/STOL technology is available, but it may not be possible to develop urban airports due to environmental and political reasons. One technological advance in aviation that significantly influences airport congestion is the aerial relay transportation system. This system could eliminate the need to expand the present airport capacity well into the 21st century.

None of the advanced-technology systems discussed above will have any significant impact on the harbor land-use areas. One system that could have some influence would be the development of the nuclear tug. However, given the heightened interest in the environment, it is extremely doubtful that this system could be developed and implemented before the 21st century.

CONCLUDING COMMENTS

All three categories considered—general cargo, bulk commodities, and passengers—could result in the usage of large amounts of land. However, only in the case of containerization of general cargo is it mandatory that this large piece of property be located on the waterfront. Capital-intensive container systems will continue to lead to a smaller number of major general cargo ports, each with major container terminal areas that serve as focal points of vessel activity as well as land transportation traffic. In general, new container terminals will be placed outside the urban centers to obtain less expensive land and better road access.

The trend to concentrate vessel activity will also occur with bulk vessels, in particular liquid bulk carriers. Offshore terminals are a possibility for these commodities. In addition, oil tank farms and petrochemical complexes can be located several miles from waterfront areas, connected to the vessel terminal by pipelines.

Potential technological advancements in airline passenger travel may be quite dramatic in the distant future. Nevertheless, for the rest of this century it appears that airline traffic will have a smaller effect on use of waterfront property than will movements of either general cargo or bulk commodities.

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Impact of Federal Real Estate Policies and Practices on the Urban Waterfront in the San Francisco Bay

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Port of Oakland

INTRODUCTION

The fragility of San Francisco Bay was recognized in 1965 by the California State Legislature with the creation of the San Francisco Bay Conservation and Development Commission (BCDC).

Naturally beautiful but attractive and easily vulnerable to development, more than 280 square miles of bay tidal surface had been reclaimed or surrounded by dikes prior to BCDC. The builders in the bay included individuals, private firms, municipalities, the state of California, and the federal government. Prior to the environmental consciousness of the 1960's, massive bay fill projects, such as the Oakland International Airport and, much earlier, Treasure Island, located virtually at the focal center of the bay, had been widely accepted by the public as marvelous engineering accomplishments. In 1936 the voters in Oakland approved by a 87,275 to 9,688 vote a proposition that donated 392 acres of marsh and submerged lands to the Navy with the express stipulation that the government fill it.

In large part shallow and easy to exploit, about two-thirds of the bay is less than 18 feet deep at low tide. By the early 1960's the public climate was shifting as more and more citizens became convinced that the bay itself was threatened. At the same time, fill projects continued at an alarming rate as the Bay Area grew "up" with San Francisco high-rise buildings, "out" to the suburbs, and "in" the marshes and shallows of the bay.

In 1965 a special Bay Study Commission, appointed by the state legislature, declared that the bay was the region's most valuable single resource and could be destroyed by continued uncoordinated and haphazard reclamation. The commission recommended creating a strong regional agency to prepare and enforce a comprehensive plan for the conservation and development of the bay and its shoreline. The public and the legislature agreed.

Legislation was enacted creating the BCDC in the same session the study commission report was received. Its powers have been increased by subsequent legislatures, and now BCDC prepares and maintains the comprehensive San Francisco Bay Plan, regulates all filling, changes in existing uses, and dredging in San Francisco Bay, and has limited development controls within a 100-foot strip inland from the bay. Additionally, BCDC has limited jurisdiction over any proposed filling of the extensive salt-production farms ringing the bay and other managed wetland, such as duck-hunting preserves, which are diked off from natural tidal action.

The BCDC Enabling Act and the commission plan recognize that development may be permitted for certain limited types of water-related uses, such as ports, water-dependent industries, bridges, water-oriented recreation, and even airports that use the open bay surface as a flight corridor away from noise-sensitive urban land areas.

Nine counties with almost 5 million people (as of May 1978) form the shoreline of the bay that gives the region its name and physical character. The land-use plans of the state, these counties, municipalities, special districts, private developers, and even the superior federal government have had to change because of these new limitations on bay fill. Garbage dumps, drive-in theaters and fill for lagoon living have been prohibited. Even fill for bay-dependent ports have been closely scrutinized. Alternative port sites that minimized reclamation have been given first priority in spite of local institutional preferences.

For the first time, the bay shoreline was tightly controlled, if not permanently fixed. To save the bay, the shoreline was the last line of defense. The harbor lines of the U.S. Army Corps of Engineers, which protected navigable waters by describing areas of the bay where fill and shoreline alteration could be permitted, became largely meaningless.

Any urban shoreline is subject to a multiplicity of conflicting land-use demands. These conflicts intensified in the Bay Area after 1965 when more than 100 years of "in-bay" growth pattern was halted and the shoreline abruptly became a limited resource.

In 1969 when the BCDC Bay Plan was approved, the federal government owned approximately 5% of the bay itself. Moreover, it

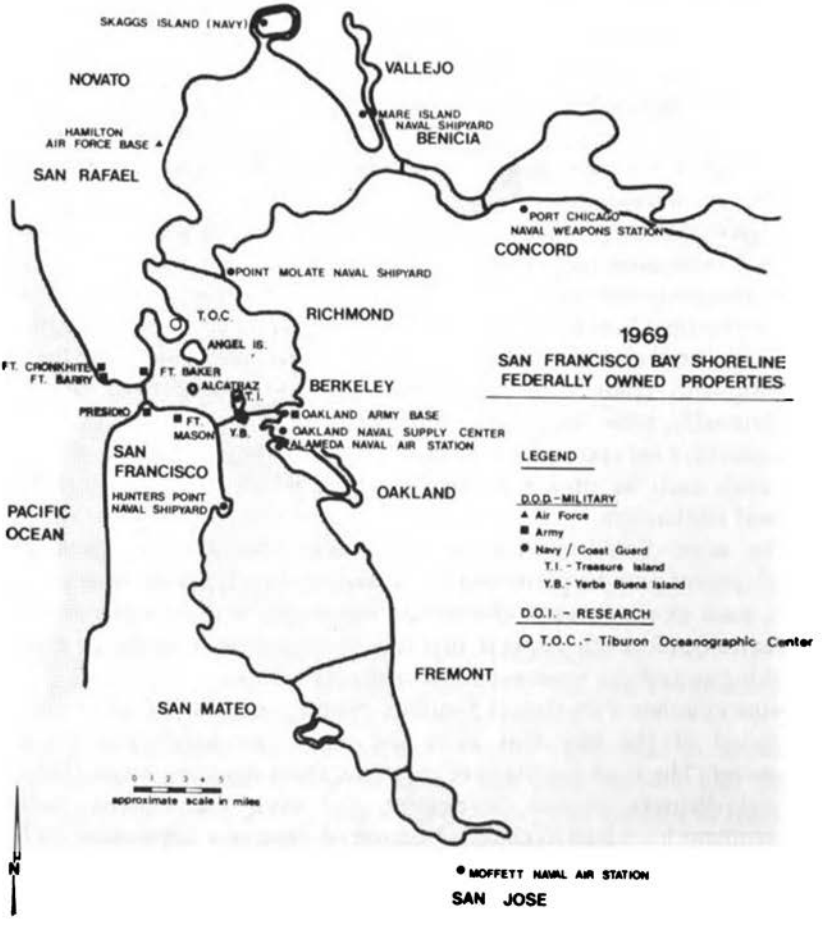

FIGURE 1

owned an important part of its shoreline (Figure 1). Military installations occupy top value and highly visible portions of the bay waterfront property. Defense properties are sited in the urban core where the conflicting land-use figures are most intense. The Presidio of San Francisco, Hunters Point Naval Shipyard, Treasure Island, Oakland Army Base, Oakland Naval Supply Center, and Alameda Naval Air Station form a large part of the most urbanized central bay shoreline.

With the curtailment of new fill, public pressures for alternative uses of these federal shoreline holdings intensified. The BCDC Plan concluded

and established as policy that " . . . the most important uses of the Bay are those providing substantial public benefits and treating the Bay as a body of water, not as real estate." Further, the Bay Plan set forth " . . . shoreline areas suitable for priority uses—ports, water-related industry, airports, wildlife refuges, and water-related recreation—exist only in limited amount, and should be reserved for these purposes."

The new bay region policy recognized the bay and its shoreline as a limited urban resource that should be dedicated for a few specified water-related uses.

PURPOSE OF PAPER

The purpose of this paper is to examine the interaction between regional waterfront planning for San Francisco Bay and federal real estate policies and decisions for alternate uses of this strategically located government property. Federally owned waterfront real estate has become available for nonfederal use since the BCDC Bay Plan was adopted. Alternate uses of other federal property are expected in the future. In examining alternate-use case histories, the paper attempts to provide insight on how federal real estate policies both complement and complicate regional waterfront planning. BCDC might declare that the bay should not be treated as mere property, but federal holdings have to be managed and conveyed under terms of strict statutes and regulations that are based on time-honored real estate principles.

Changes in use of federal property can occur in a variety of ways. Local government and its land-use planning is most typically affected when government property changes uses through the surplus property disposal procedures carried out under the Federal Property and Administrative Services Act of 1949 (surplusing), or under military granted leases carried out under Title 10, United States Code (Title 10 leases).

West Coast ports are handling an increasing share of total United States maritime trade. In 1970 the West Coast share of total U.S. maritime exports was 21.3 percent. By 1977 the West Coast share of this market had grown to 28.1 percent. West Coast share of total U.S. exports to the Far East grew from 41.9 percent to almost 74.3 percent in the same period.[1]

The pressure for commercial port and other nonfederal use of the shoreside Bay Area military bases will continue to mount. Local ports will need to expand with a minimum of environmental consequences to meet the growing requirements of West Coast maritime trade in a growing peacetime economy. The conservation goals of the Bay Plan

support use of existing shoreline areas for certain specified bay-dependent purposes like ports. Federal outleasing and surplusing procedures will be crucial to the recycling of these properties in conformance with the San Francisco Bay Plan.

SURPLUSING

Federal property declared "excess" to the requirements of the particular owning federal agency may be declared "surplus" to the needs of all federal agencies after a canvass of their requirements by the General Services Administration (GSA).

Federal surplusing procedures recognize that certain properties should be maintained for priority public use purposes. If such recognition is granted, then fair market value real estate principles are set aside, and the property can be conveyed to state or local public agencies without compensation. Federal properties can be granted to public agencies without monetary consideration for public parks or recreational areas, historic monuments, public health or educational uses, wildlife conservation, or a public airport. If the government determines that its surplus property should be dedicated to one of these public purposes, its subsequent use by the acquiring local agency is restricted to the designated use. However, the priority bay-related uses established by BCDC and the federally established priority public purposes do not fully conform. BCDC includes ports and water-related industry as priority bay-related uses. These two land-uses are missing from the federal categories that can exempt federal conveyances from standard real estate principles. If the U.S. government determines that surplus property should be permanently maintained as a public airport, it can be conveyed at no cost to a nonfederal public agency, which must operate the acquired real estate for that purpose. Just such a determination has been made in connection with the disposal of Hamilton Air Force Base, located on more than 1,000 acres of choice bay shoreline about 30 miles north of San Francisco in Marin County. However, this BCDC-recognized bay-related use is now facing stormy local opposition from citizens who fear the noise and other environmental impacts that would result if the property is ultimately developed as a regional air carrier airport.

Although recognized by BCDC as bay-dependent public assets, ports do not enjoy the same federal priority public use status as airports under federal surplusing. No longer able to create entirely new port sites or substantially expand existing marine terminals with bay fill when alternative upland locations are available, the local port agencies of

Oakland and San Francisco have eyed seriously the vast adjacent federal properties.

The Bay Plan recommends that the Oakland Army Base, the Oakland Naval Supply Center, and the Alameda Naval Air Station, which in total occupy approximately 10 miles of East Bay shoreline in close proximity to the modern container terminals of the Port of Oakland, be first considered for port and related industrial uses if they are not needed for military purposes. The same Bay Plan designation was applied to the 930-acre Hunters Point Naval Shipyard located near the Port of San Francisco. Acknowledging the importance of maritime commerce, BCDC intended to limit bay fill pressures by suggesting recycling these government properties for commercial port purposes if they were not needed for first priority national defense needs.

From the federal viewpoint, "fair market value" and "highest and best use" real estate requirements must govern disposal for port uses. Although ineligible for "no cost" conveyances, public agencies may acquire surplus government property for port uses by paying fair market value on a negotiated basis without competition from private sector bidders. Before negotiations, GSA arranges for an appraisal of fair market value. The GSA pamphlet entitled *Disposal of Surplus Real Property,* dated April 1978, states:

> Maximum benefits to the community and to the Federal Government are realized when surplus real property is disposed of for its highest and best use. Since the determination of the highest and best use of the property is the keystone of the appraisal process, an appraisal of its fair market value in the early stages of disposal planning provides vital information and data about local market conditions and potential, physical characteristics and capabilities of the property, etc. . . .

The pamphlet concludes under the section explaining why GSA has the property appraised:

> . . . The appraisal provides a satisfactory means of determining the basis for negotiated disposals to non-Federal public agencies as well as the most acceptable guide for evaluating the adequacy of bids received in competitive bid sales offerings.

GSA is required to deal first with the nonfederal public agencies on a noncompetitive basis, but the government must receive fair market value consideration or it will offer the holding on an open competition basis. Although BCDC may designate that certain surplus military bases be first considered for port and related industrial uses, local operating agencies have no assurance of use for port purposes unless they can meet the price

requirements of federally determined fair market value. The appraisal process is the key to such acquisitions.

These terms are defined for appraisers in GSA Form 1241 D:

Highest and Best Use

The most profitable likely use, within the realm of reasonable probability, to which real and related personal property can be put or adapted, and for which there is a current market.

Fair Market Value

The highest price estimated in terms of money which the property will bring if exposed for sale in the open market by a seller who is willing but not obligated to sell, allowing a reasonable time to find a buyer, who is willing but not obligated to buy, both parties having a full knowledge of all the uses to which it is adapted and for which it is capable of being used.

Local zoning must be recognized by the fair market value appraisal in that the process considers capability of use, but local city zoning typically permits a wide range of uses. Zoning for the Bay Area military installations would allow a number of alternate uses to be considered in the appraisal process. These other-use opportunities could raise fair market value judgments to a level that would price property out of reach for public port or other bay-dependent uses in spite of BCDC Bay Plan recommendations.

TITLE 10 LEASES

Title 10 leasing of military property follows a different procedure. Under Title 10, the property is not "excess" or "surplus," but instead it is temporarily made available for other uses. These outleasing arrangements are managed by the appropriate real estate arm of the property-owning military department under the terms of its governing regulations. Typically, defense use can pre-empt lessee rights in military contingency or surge conditions.

Except for certain educational uses, Department of the Army regulations specify that real estate lease consideration will be the appraised fair rental value. In awarding leases under Title 10, the Army does not have GSA's latitude to disregard fair market value consideration for certain public use purposes such as parks, airports, etc. Instead highest dollar value considerations prevail.

Questions are even raised under Title 10 whether or not public agencies have a preference over private interests in negotiating for military leases. For example, under GSA surplusing procedures, clearly a

public agency proposing a port use of surplus military property would receive priority consideration over a privately sponsored industrial use proposal. If the nonfederal public agency met GSA's determination of fair market value, then it could expect to acquire the properties.

The public use priority is not so straightforward for awarding leases of military property. For example, Army regulations stress that a policy of competition will be followed " . . . to secure for the government the benefits which flow from competition, and to prevent criticism that favoritism has been shown. . . . "[2] Reasonable efforts to obtain competition through advertising are required. Exceptions to the advertising policy are permitted under certain circumstances including granting leases to public agencies. Waivers of competition may also be allowed upon a determination that it would be in the public interest.

A casual review of Army regulations would seem to give nonfederal public use of military properties a policy preference. Section 643.23 of Title 32 CFR reads:

> Army real estate under the control of DA which is made available for use for other than Army purposes will be made available for use by other military departments or DOD activities and agencies, other Federal departments, activities or agencies, State or local governmental bodies and other private parties, in that order.

However, the lack of a comma to separate "local governmental bodies" and "other private parties" has been given by military real estate spokesmen as a basis for coupling local public and private interests in equal competition for leasing Army real estate.

Local public agencies can be granted a waiver from competition if it is determined to be in the "public interest." However, public interest usually means federal as contrasted with local interest. It can be argued that federal public interest is best served by competition and highest rental possible. To the contrary, local public interest, as defined by the San Francisco Bay Plan, is based upon accommodating limited but competing water-dependent uses with environmental protection. In other words, local public interest would not award leases on top dollar real estate standards.

CASE HISTORIES

Although in the 10 years since the Bay Plan was adopted the federal ownership in San Francisco Bay has actually increased (see Figure 2), three major military properties covered by the BCDC "port and related waterfront industry" land-use designation have become available for

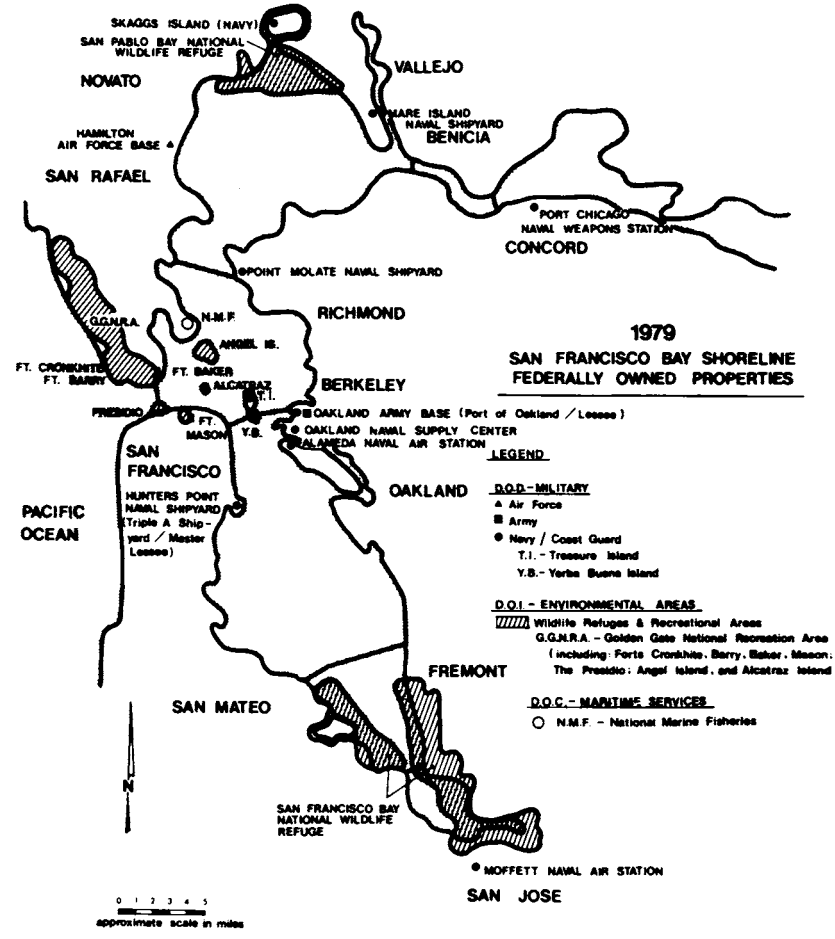

FIGURE 2

nonfederal use: Hunters Point Naval Shipyard, San Francisco; Ocean Terminals, Oakland Army Base; and Marshalling Areas, Oakland Army Base.

The major portions of these military properties were offered for lease, not sale. Other nonfederal use arrangements of military property are likely to follow the Title 10 or similar federal outleasing procedures since these arrangements insure the easy availability of military property for defense purposes in the event of a wartime emergency.

Reviewing recent lease proposals and awards should be instructive

and provide some insight on how federal real estate policies can impact on urban waterfront planning. Possible areas for conflict are apparent under both surplusing and Title 10 leases. Priority land-use designations can vary; federal and local interpretation of a public interest can differ; and expressions of local interest can be confused and poorly articulated to the federal decision makers. A recap of the three most recent principal outleasing arrangements of military waterfront property in the San Francisco Bay Area is presented below to trace specifically how urban waterfront development was affected by these intergovernmental actions.

HUNTERS POINT NAVAL SHIPYARD

The City and County of San Francisco were faced with a formidable economic challenge when the closure of Hunters Point Naval Shipyard (HPNSY) was announced by the Department of Defense in 1973.

Comprising approximately 930 acres of waterfront real estate including 522 acres of dry land, HPNSY became the largest real estate parcel available for industrial development within the City and County boundaries.

Although the BCDC Bay Plan designation of Hunters Point read: "If and when not needed by the Navy, give first consideration to port and industrial use," the city's first priority was to maintain the property's economic and job productivity. At the time the closure was announced, the Hunters Point Naval Shipyard was one of the largest Navy carrier overhaul facilities on the West Coast. It was also the largest industrial employer in the City and County of San Francisco with 5,600 civilian and 300 military employees accounting for a payroll of approximately $82 million annually.[3] Expectedly, the City protested and opposed the Navy's approved plans to close the yard. Recognizing the inevitable, the City began working with the Navy and other federal agencies to prepare a reuse plan that would restore the property's economic force.

Originally, the Navy intended to excess the major portion of the property while retaining the yard's big Dry Dock Number 4, which was one of the largest in the continental United States, as well as 48 acres of support facilities. San Francisco officials were concerned that the market could not absorb such a massive area on short notice. The City contended that the economic utility of the property in commercial use was damaged by the Navy's plans to retain the large dry dock and support area, which effectively cut the yard in half.

Planning for commercial use of the property began internally by the City and later included outside professional advice as federal planning grants became available. A panel from the Urban Land Institute of

Washington, D.C., supported the need for civilian use of the large dry dock and sided with the City that the property's reuse capacity would be enhanced if it were maintained as a unit. The Navy had determined that the dry dock must be available for national defense purposes in the event of emergency, so this central section of the yard could not be excessed and subsequently sold under GSA surplus property procedure. To resolve the dilemma of a potentially unfortunate division of the property, in January 1974 the Navy agreed that it would retain a major portion of the property but offer it for lease including the large dry dock.

In March 1975 the U.S. Congress approved the Navy's plans for leasing the 371-acre industrial core of the yard, including large Dry Dock Number 4, and declaring excess the remaining 525 acres. Although the Navy agreed to lease the facilities, it intended to award a one-party master lease to avoid problems of multiple tenancy. This policy would limit applicant interest. Few public agencies or private firms could pay the required maintenance and protection expenses for the large areas estimated at about $1.5 million annually.

The City's planning for reuse options had begun shortly after the Navy announced its intention to close the shipyard. A June 1974 *Hunters Point Shipyard Study,* prepared for the City Planning Department by the consultant firm of Sedway/Cooke and Development Research Associates, depicted near- and long-term preferred uses for 25 subareas. Recommended preferred uses included shipbuilding and ship repair, marina, commercial, park, marine-related industrial support, and residential. Near-term-use employment was estimated at between 7,200 and 11,500 jobs. Over the long term, the range for jobs created was between 11,700 and 16,600.

The City's semi-autonomous Port also eyed the property for its expansion. Clearly, port use would be consistent with the BCDC Bay Plan, but not necessarily with national contingency requirements of the Navy and local interest in maximizing employment productivity. Located on the southern waterfront where recent port expansion had centered, the shipyard presented the Port with a tempting BCDC-compatible expansion possibility. The facility's piers were served by an unrestricted approach channel with minimum water depths of 60 feet, which offered special deepwater navigation advantages.

During the period when the reuse and reassignment of Hunters Point was being considered, San Francisco experienced changes in top elected and administrative positions. A new mayor was elected in December 1975 and a new executive director was hired to head the City's semi-autonomous Port.

The City's policy was evolving into a position that the City itself

should be the master leasee for the entire yard. A lease to the City would meet the Navy's "one lease" policy while allowing the City to exercise maximum control over reuse activities.

The Port proposed to convert the property into an ocean terminal for handling bulk cargoes, primarily export coal movements. Rail access would be improved and large open areas would be dedicated for open storage of coal. A raised conveyor system was proposed to traverse the yard from east to west for moving the bulk product from the storage piles across the property to the deepwater berth. Other uses proposed by the Port included a container terminal, ship repair and marine industry, marina, park, commercial support, and residential.

Although not as job-intensive as envisioned by the City-sponsored Sedway/Cooke plan, the Port plans gradually gained City support. As a revenue-producing agency, the Port had the special capacity to lease the property without reliance on tax support. Operating as a public enterprise, the Port intended to cover lease and maintenance expenses from sublease and other property revenue sources.

A competing proposal was received from Triple A Machine, Inc., a San Francisco ship repair firm. Triple A proposed to move its entire ship repair and conversion operation from another section of the San Francisco waterfront to Hunters Point. Triple A previously had no dry dock capability. The firm proposed to expand its operation at Hunters Point and develop shipbuilding capability in addition to ship repair and conversion.

Although the City officially supported the Port's proposal, local interests were divided. The Triple A plan promised the most employment. Also, the continued shipbuilding and repair uses proposed by Triple A were appealing to the Navy's primary concern for recapture in the event of national emergency or military necessity.

Based upon the proposed reuses of the private and Port proposals, the City determined by mid-1975 that the successful conversion of the property was dependent upon a larger lease area. The City felt that the boundaries separating the leasable area from the excess areas did not provide the City with sufficient control over the excess area, which eventually was to be sold as surplus government property. Both the Triple A and port proposals depended upon a larger lease than was available at that time. The lease area was subsequently expanded to 863 acres. The Navy determined to retain 51 acres for its own use including lease administration, and report about 51 acres to GSA for disposal.

The broad land-use designation of "port and industrial use" in the BCDC Bay Plan provided little guidance in selecting from these two competing waterfront-dependent proposals. The BCDC plan and policies

recognized the importance of ports, but it gave similar status and recognition to water-related industries such as shipbuilding and repair. The Bay Plan specified that a regional port plan be prepared to guide future marine terminal development, but the port plan was not completed (and still is not) by 1976 when the lease was granted.

It was argued that the port proposal was not oriented to job development since bulk-loading terminals are largely automated. Further, Navy recapture might be complicated by a commercial port use for expansion of U.S. exports. The conveyor system, although removable, would cut through the Dry Dock Number 4 area, which was to be maintained in a military mobilization status.

The Navy dealt with the public agency but awarded the master lease to Triple A on June 1976. The Triple A plan reserved areas for port development. Prior to the Navy's lease award, Triple A signed an agreement setting forth its intent to sublease to the Port of San Francisco land that was then considered necessary for port expansion. The sublease was never executed. Differing reasons are given.

Although the port proposal never generated widespread public support, it was presented as the official city position. In October 1976 the City and County of San Francisco brought suit against Triple A for $500 million. The suit would preclude Triple A from using areas of the yard needed by the Port for container cargo and the coaling storage station. The suit was thrown out of the U.S. District Court in the spring of 1978 and is expected to go to the U.S. Court of Appeals in March 1979. Although the San Francisco Chamber of Commerce first supported the suit, it soon reversed its position. After the litigation was started, another top level personnel change occurred at the City and Port with a new mayor appointed and a new port executive director selected, which raises further questions as to the future city position.

HPNSY is the largest federal property to become available for locally controlled use since the Bay Plan was approved. At best it affords a murky example of how federal real estate practices would or would not support regional waterfront planning. The federal government chose the private over the public proposal. However, it can be argued that the private proposal was in the best public interest from both a federal and local viewpoint. It was more job supporting, minimized the national defense mobilization problem, and was a water-dependent BCDC-recognized industrial use.

The lack of a strong commercial port element in the BCDC Bay Plan hurt the city/port proposal. Since both proposals were compatible with the Bay Plan, there was no regional expression of preference by the authorized Bay Area waterfront planning agency to guide federal

outleasing procedures. If a regional port element of the Bay Plan had been prepared that designated Hunters Point for port use only, the outleasing outcome may have been different. The lesson to be learned from Hunters Point is that more specific regional waterfront planning will be necessary if local/regional interests are going to play an influential role in federal property reuse decisions. An equivocal regional waterfront plan leaves the federal government to interpret both the national and regional/local interest.

OCEAN TERMINALS, OAKLAND ARMY BASE

Leasing of the ocean terminal portion of the Oakland Army Base for commercial cargo operations of the Port of Oakland conformed exactly to the purposes and designations of the BCDC Bay Plan. However, this clear-cut example, supporting the Bay Plan, provides little comfort that federal real estate policies and practices would support regional waterfront planning in the future. Like Hunters Point the lesson here is limited.

The ocean terminals of the Oakland Army Base were leased to the Port of Oakland in 1978 without competitive bidding but based upon fair rental value determined by government appraisal. The lease covers 63 acres within the 557-acre Army Base located adjacent to the East Bay terminus of the San Francisco-Oakland Bay Bridge. Although this lease to the Port conforms fully to the BCDC Bay Plan, the government's choice of users was restricted. The property was originally controlled by the Port of Oakland and acquired by the military by condemnation filed at the outbreak of World War II. The final agreement in condemnation reserved certain recapture rights to the Port in the event the property was not needed for national defense purposes. Therefore, this reassignment should be viewed with caution as an indication of compatible inter-government policies and practices.

MARSHALLING AREAS, OAKLAND ARMY BASE

The outleasing of the marshalling yard area of the Oakland Army Base will probably be a more telling example. On July 31, 1978, the Army reported to the House Armed Forces Committee in Disposal Report 626 its intention to lease approximately 23 acres of open area plus certain rail yards and support facilities. The Army's reuse alternatives for these properties were not limited by recapture or first refusal rights by other parties.

The 23-acre open area, located adjacent to the Port of Oakland

container terminals, is the largest and last undeveloped parcel of real estate in the Oakland Harbor area. Surrounded by industrial uses, strong nonfederal competition developed for the use of this property. The Port of Oakland sought the area in support of its marine terminal activities. The disposal report set forth the Army's intentions to *advertise* the property for lease on terms determined by the Secretary of the Army to be advantageous to the government.

In compliance with the Bay Plan, the Port Authority presented a proposal for the use of the property and requested that the Army waive competitive bidding. The Port recognized that the Army would insist upon fair market rental rates as established by government appraisal. The Army responded as follows:

> It is the policy of the Department of Army that the leasing of real estate will be on a competitive basis. Only in exceptional cases may competition be waived, such as when the national defense or the federal public interest are advanced. Competition affords all qualified persons and non-federal government entities an equal opportunity to bid for the use of property, secures for the Federal Government the benefits that flow from competition, and prevents criticism that favoritism has been shown by officers or employees in making public property available for non-federal use.[4]

Further, the Army responded:

> The military requirement at Oakland Army Base dictates that the property retain its open storage configuration. The Port's concept, as well as the concepts advanced by other parties, will satisfy the open storage requirement. It is, however, not so unique that a waiver of competition could be granted because their proposal, above all others, would benefit the national defense or federal public interests.[4]

The Army's outleasing policy clearly did not recognize local government priority over private interests. The U.S. Maritime Administration expressed its views on the Army's proposed procedure as follows:

> We are concerned that if this water-related facility is leased out under competitive bidding that it may go to a private corporation which would not have the same interest and motivation to retain it as a public facility dedicated to serving U.S. import/export waterborne trade. . . . Although the Bay Area could accommodate all kinds of commercial and recreational uses, there are certain properties, such as the port-related property in question, with unique characteristics which public interest believe should be preserved for port activity and water-related use.[5]

Under the Federal Coastal Zone Management Act of 1972, as amended (16 U.S.C., Sec. 1451 et seq), BCDC has been designated by the

Secretary of Commerce as the state agency responsible for the management of the San Francisco Bay segment of the California coastal zone. One of the effects of that designation is that the so-called "federal consistency" provisions of the act apply. An applicant for a federal license or permit (which under federal regulations includes a prospective lessee) for an activity that may significantly affect the coast zone of a state is to certify that the activity is consistent with the state's approved management program. This certification must be submitted to the state agency designated as responsible for administration of the state's coastal zone management program—in this case, BCDC. If the state agency objects to the certification, the federal agency involved may not issue the license, permit, or lease.

The BCDC staff advised the Army that it considered that the proposed Army lease would have a significant effect on the BCDC segment of the California coastal zone. The BCDC staff commented on the Army's proposed outleasing process as follows:

> The area is currently designated in the BCDC Management Program for port priority use. This designation was based on careful consideration of the regional and national need to reserve key shoreline sites for specific, high-priority, water-related uses. The Commission made these designations because of the intrinsic importance of such uses to the regional and national economy and because of the need to reduce pressure for further fill in the Bay to create sites for such uses.
>
> In this connection, we understand that the Port of Oakland has indicated its desire to acquire and develop the site for port purposes. We believe that this use would be consistent with the BCDC Management Program. We have also learned that there is a possibility that the Army may lease the property for purposes that may not be port-related. This would not appear to be consistent with the BCDC Management Program.[6]

The Army's position that open competition was in the federal public interest does not conform with the BCDC Bay Plan that the bay should not be treated as "real estate" and that shoreline sites should be reserved for specified bay-dependent purposes. Further, the Army's unwillingness to first negotiate with the local public port agency before considering private interest proposals was not symptomatic of support for the Bay Plan.

The Port of Oakland continues to press its position that the Army should consider its proposal for a port-support use of the property before receiving other proposals. Although the final outcome of this outleasing case is not known at this writing, the Army's intentions as first announced would indicate a conflict between its real estate practices and the goals of the Bay Plan.

SUMMARY

Clearly, along the urban waterfront, the federal and local public interests do not yet fully conform. GSA surplusing procedures recognize priority uses available for "no cost" conveyances, which do not parallel the priority bay-related uses of regional waterfront planning agencies such as BCDC. The Title 10 outleasing procedures of the military are framed around top-dollar considerations. These actions have encouraged open competition between private and public use proposals for scarce waterfront properties such as that seen in the Army's plan for outleasing the marshalling yard areas of the Oakland Army Base. Lack of definition in local waterfront planning, as evidenced in the leasing of the Hunters Point Naval Shipyard, has left federal agencies with no choice but to determine not only the national but local public interest as well in their reassignment decisions.

The relatively recent Coastal Zone Management Act could be the most convincing tool to assure that federal waterfront properties are recycled consistent with local planning. Local planning will need to be definitive if it is to effectively guide "consistency" determinations. Still, a consistent use is not necessarily the best use. Planning and development of the limited urban waterfront will need best alternative solutions.

RECOMMENDATIONS

A review of federal procedures for conveyance and lease of government property on the urban waterfront would seem in order. If the regional waterfront plan designates available federal areas for a water-dependent use, such as a port, then it would seem that the federal and local interests should conform by encouraging, not complicating, such a transfer. "Dollar" competition federal real policies pitting public against private interests for scarce waterfront properties will aggravate attempts to achieve best alternative recycling solutions. Best alternative urban waterfront planning would be advanced if federal real estate policies and regulations were reviewed in an attempt to ease accessibility of available waterfront lands for regionally recognized water-dependent, public purposes. This type of new emphasis in government real estate practices would coincide with the purposes of the Coastal Zone Management Act, which aims toward increasing intergovernmental cooperation and coordination to achieve both predictability and efficiency in public decision making for the urban waterfront.

NOTES

1. Port of Oakland Research Department.

2. Section 643.24 of Title 32 CFR.

3. Economic adjustment program, San Francisco, California, Hunters Point Naval Shipyard, dated September 1976.

4. Letter dated October 2, 1978, from Brig. Gen. Vincent M. Russo to Congressman Ronald V. Dellums.

5. Letter dated January 26, 1979, from Robert J. Blackwell, Assistant Secretary for Maritime Affairs, U. S. Department of Commerce, to Alan J. Gibbs, Assistant Secretary of Installations, Logistics and Financial Management, Department of Army.

6. Letter dated January 31, 1979, from Charles R. Roberts, Executive Director, BCDC, to Alan J. Gibbs, Assistant Secretary of Installations, Logistics and Financial Management, Department of the Army.

The Use of Waterfronts for Public and Private Recreation

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SETTING THE STAGE FOR DISCUSSION

BACKGROUND

The rediscovery of urban waterfronts has been occurring in city after city during the last few years and recreation has often played an important role in this renaissance. Historically, cities developed adjacent to waterways due to the availability of water for transportation, industrial production, water supply, and power production. Little attention was given to the waterways or the waterfront as amenity or recreational resources.

As urban development has progressed, the traditional uses of waterfront lands have often been rendered functionally or economically obsolete by technological changes, the changing economy of the central city, and other unforeseen forces. Since urban waterfronts are too valuable a resource to lie fallow or underutilized, many cities have initiated waterfront renewal efforts that have in many cases, often due to an increasing public awareness and interest, given major consideration to recreation as a waterfront use. Numerous issues have arisen as planning for waterfront redevelopment has proceeded, as exemplified by such questions as:

- What are the forces that have historically shaped waterfront uses and are they still in effect?

- What are the limitations that have historically constrained the recreational use of urban waterfronts?
- How should recreation be balanced with other waterfront uses?
- What should be the role of the waterfront in the total urban recreation system?
- How does the changing role of urban waterfronts in local and regional economies affect their recreation potential?

The diversity of the natural, institutional, and legal characteristics within the many urban areas, together with the differences in philosophies regarding waterfronts, means that the answers could vary widely from city to city.

SCOPE OF DISCUSSION

Although there are many problems that necessarily need to be addressed in formulating policies to guide the redevelopment of urban waterfronts, the discussions that follow are limited to the consideration of urban waterfront recreation, how it might fit into the overall urban waterfront picture, and how it relates to the total urban recreation system. The objective of these discussions is to provide some insight into the successes and failures of planning and development activities that are now in various states of completion. The experiences gained by Boston with the adaptive reuse of waterfront warehouses and with the "demothballing" of the Charlestown Navy Yard; those of Toronto with its ambitious program of lakefront park expansion; those of Chicago in building upon its already impressive waterfront park system; and those of Detroit in initiating an effort to redevelop its riveredge are all examples of what is possible.

In order to provide some degree of focus for the analysis that preceded the preparation of this paper, a working definition of "urban waterfront recreation" was developed.

Urban waterfronts were defined as those shorelines within urbanized areas (as defined by the U.S. Census Bureau) that lie along navigable waterways. The waterways include rivers, bays, estuaries, lakes, oceans, harbors, reservoirs, and canals. This definition was not adopted to discriminate against the "nonmetropolitan urban centers" (e.g., Calais, Maine; St. Mary's, Georgia), many of which have already taken steps to enhance waterfront recreation opportunities. The discussion is limited to major urban areas due to the complexity and severity of the problems and the potential for improving the situation of large numbers of people.

The term recreation, as it is used in the following discussions, is a

multifaceted term. A broad-ranging definition of recreation, and one that starts to get at the breadth of its meaning, appears in a recently published report prepared by the U.S. Department of Interior:

> Recreation is refreshment of people's minds and bodies through non-compulsory free-time activities, usually in contrast to or as a diversion from day-to-day routines. Recreation activities may be pursued for many purposes, including physical and mental fulfillment, personal recognition, stimulation, learning and socializing. Recreation takes place in many physical settings ranging from buildings (homes, museums, recreation centers, movie houses) to completely natural environments (mountains, rivers, seashores).[1]

For the purpose of the discussions that follow, then, the term "waterfront recreation" is used to describe a number of leisure activities, functions, and concepts. For example, it includes physical and visual access to the waterways, enjoyment of the waterway and the waterfront as an amenity and as a place to watch or participate in sporting activities, the provisions of facilities to accommodate and entertain tourists, the provision of a place to find and enjoy peace and quiet and/or to contemplate nature, participation in or watching of water-related or water-enhanced leisure time activities such as swimming, boating, fishing, and picnicking among many, and utilization of the waterfront as a place to promote awareness of the city. These examples are included to show the breadth of the functions that are considered to be potential waterfront recreation uses.

The next section of this paper focuses on the planning process including discussions of the balancing of recreation with other waterfront uses, the waterfront as one element of an entire urban recreational system, and some common problems cities have encountered in planning for waterfront redevelopment together with some uncommon solutions to these problems. The third section focuses on the development processes including discussions of approaches to physical development and examples of institutional cooperation and coordination. The final section presents conclusions and recommendations including discussions of future prospects and likely problems.

THE WATERFRONT PLANNING PROCESS

BALANCING RECREATION WITH OTHER USES

Urban waterfronts are too valuable a resource to be allowed to lie fallow, but agreement as to specific plans for their revitalization is often difficult to obtain. Most waterfront segments are part of one or more existing

communities/neighborhoods, but also serve as a citywide, and sometimes even regionwide, resource. Physical barriers and constraints, including railroad tracks, expressways, derelict piers, abandoned and dysfunctional buildings, flooding and hurricane hazards, and channel dredging and spoil disposal requirements, hinder redevelopment, often at the expense of the economic feasibility of redevelopment.

It is also important to recognize that waterfront-related issues, especially those with an environmental orientation, are rather low on the priority list of concerns of most cities. Such concerns as jobs, outmigration of population, education, crime, and balanced budgets are the "gut" issues dominating the attention of most cities, especially the older ones. However, creative and pragmatic solutions are still needed that are environmentally sound, economically feasible, socially acceptable, and politically practicable. Recreation may serve as a catalyst in waterfront revitalization. However, there is still a question as to the exact role recreation should play in the future of waterfronts. More explicitly, the question is: How should recreational development fit into overall waterfront redevelopment?

Recreational uses of urban waterfronts should reasonably be balanced with other uses. Ports continue to be a major occupant of waterfronts irrespective of the technological advances. Although the complexion of transportation is changing, it continues to be an important force in shaping urban waterfronts. Although there are numerous examples of national defense functions withdrawing from coastal areas (e.g., the Charlestown Navy Yard in Boston; the Naval Station at Newport, Rhode Island), there are still many areas where such functions are still active (e.g., San Diego, California; Pensacola, Florida). Residential use of waterfront lands, once displaced from waterfront locations, is becoming an economic force in the revival of waterfronts (e.g., adaptive reuse of warehouses on several wharves in Boston Harbor). In addition, industrial and commercial uses of waterfront lands are still important factors on most waterfronts. And energy facilities (e.g., power plants, pipelines, tank farms) still use major portions of some waterfronts. Finally, water supply and waste-water treatment facilities are located on waterfronts in several major cities.

The competition for use of urban water space is often just as keen as for the land and will continue to get more acute in the future. As water quality improves and as boating activities increase, the demand for water space to use for recreation will increase, just as on land. Provisions also need to be made to accommodate commerce, transportation, water supply, energy production, and many other development forces.

The balancing of competing demands for coastal land and water space

is also a national concern that was popularly articulated in the report *Our Nation and the Sea*[2] in the late 1960's. In response to this and other concerns, Congress took action in 1972 to reconcile the balancing of competing demands with the passage of the Coastal Zone Management Act of 1972. The Act declared a national policy:

> To encourage and assist states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for economic development. . . .

Each coastal state participating in the federal program must formulate a program that includes guidelines on priority of uses within particular areas of the coastal zone. Although urban areas were not the primary focus of this legislation, the thrust of the Act is such that it can provide guidance in allocating space to balance the competing demands.

A document was prepared to assist states in formulating these coastal zone management programs[3] that suggested 14 considerations to be addressed in formulating the state guidelines for priority of uses. Many of these considerations are appropriate to urban waterfronts including prior commitment of land (and water), scarcity and uniqueness, diversity, dependency, economic efficiency, and social equity.

The treatment of urban waterfronts provided by those coastal zone management programs in California,[4] Illinois,[5] and Massachusetts[6] are excellent examples of policies encouraging the balancing of competing demands.

A common set of values and principles seems to recur in most locally formulated waterfront plans: the need for open waterfront space and parks in heavily urbanized areas, and the importance of physical and visual access to the water. In some cases, as well, the concept of protecting the heritage of a working waterfront is an added factor. The Baltimore Inner Harbor urban renewal project,[7] the proposed Battery Park City[8] and Manhattan Landing[9] in New York City, and the Paseo del Rio in San Antonio, Texas, all include some provision of waterfront open space and access. All of these projects have another key ingredient: substantial private investments that are either directly or indirectly linked to the proposals. The presence of the private sector in this way will provide some impetus for a balance between recreation and other waterfront uses.

THE ROLE OF THE URBAN WATERFRONT IN THE CITY'S RECREATION SCENE

Each urban recreation system should accommodate a variety of opportunities and should be capable of being modified to respond to changes in preference. A neighborhood park, a play lot, a regional greenway, a museum, a movie theater, a bowling alley, an amusement park, and a convention center are all examples of elements of such a system, which involves both the public and private sectors.

The waterfront as a place to recreate needs to be considered in terms of its role *vis-à-vis* the entire system. In order to accomplish this, an insight into the extent of the problems confronting recreational providers may be useful. The demand for recreational opportunities is increasing rapidly in response to increases in population, disposable income, leisure time, and mobility. This demand is especially acute in urban areas where population concentrations within specific areas are increasing and the availability of suitable land and water areas to accommodate the demand is decreasing.

A study prepared for the U.S. Senate Committee on Interior and Insular Affairs[10] presents a series of facts that emphasize the degree of the problem in urban areas:

- Participation in some form of outdoor recreation activities is increasing at the rate of 10% each year.
- Approximately 75% of all activities occur during pastime hours close-to-home (within an hour's drive) and on one-day outings.
- Less than 3% of the public recreations lands are available for close-to-home use by people living in major urban areas.
- Approximately 47% of the population lived in major urban areas in 1965.

Another study prepared as part of a Nationwide Outdoor Recreation Plan[11] shows that although the park and recreation acreage of local governments is significantly less than that administered by states and the federal government, these locally managed areas provide most of the close-to-home recreational opportunities.

In the same study,[11] the role of the private sector in providing outdoor recreational opportunities was identified as being equally as important as that of the public sector. Private enterprise, both profit and nonprofit in nature, provide an estimated 50 percent of all recreational opportunities.

Private enterprise provides recreational facilities, on-site concession services, amusement and spectator sport activities, and private and quasi-public recreation facilities and areas.

There are also numerous other recreational activities that should be considered as elements of a total urban recreation system. For example, indoor recreation is an important part of the overall picture, especially where climatic conditions limit year-round outdoor activities. Educational and cultural pursuits are also important as are the facilities necessary to support tourism.

What implications do these problems have for urban waterfronts? Which recreational opportunities are appropriate for a waterfront location? What private recreational developments should be allowed or encouraged? Who should prepare priorities for waterfront recreational development and how should they be established? Do all urban residents have the right to some basic recreational opportunities or service supported through general tax funds? These are among many of the questions that should be asked in formulating strategies for identifying appropriate waterfront recreational opportunities.

The answer to the question of appropriateness of recreational development on the waterfront will depend, to a large degree, on who is to provide the service, area, or facility. There are at least six separate "actors" on the scene who presently provide urban waterfront recreation, and each has a different perspective of his role. The federal government, acting through the National Park Service, has several parks and recreation areas on urban waterfronts (e.g., Gateway East in New York/New Jersey, Gateway West in San Francisco Bay, Indiana Dunes National Lakeshore). These are all supraregional facilities that provide limited variety recreational opportunities designed around the "environment" within which the parks are located.

Many states also operate parks in areas characterizable as urban waterfronts (e.g., Liberty State Park in New Jersey, Illinois Beach State Park on Lake Michigan). For the most part, these types of facilities are dedicated to the pursuit of passive-oriented recreation (e.g., fishing, swimming, picnicking) and environmental education.

A third provider of waterfront recreation space is the private sector, which operates some type of recreational development for profit or to enhance residential or commercial development. For the most part, the profit motive (e.g., commercial marina, marine land) or development standards (e.g., waterfront promenade, swimming pool) governs the scale and type of activities accommodated.

Quasi-public or nonprofit organizations are a fourth provider group that could possibly provide numerous types of recreational opportuni-

ties, but any one facility or area is limited by the organizational charter (e.g., sailing club, tennis club, day camp).

The last major provider of waterfront recreation space is the local government unit (i.e., municipality, county) which operates or could operate a broad spectrum of sizes or types of facilities (e.g., the Chicago Park District runs several "street end" beaches as well as the large and complex Lincoln Park, all of which are waterfront recreation space).

It is this last group that must accommodate the widest variety of recreational opportunities, all of which have come to be expected by urban residents. In some cases, waterfront recreational opportunities are provided by one of the other groups (e.g., swimming areas, tennis courts, picnic areas), especially in accommodating the needs of low- and moderate-income residents. In other cases, the local recreation and parks agency is expected to provide opportunities that are outside the mandate or interest of the other groups (e.g., play lots, field houses, fishing areas, sports fields), whether on the waterfront or elsewhere. Proposals that provide for this type of recreational opportunities cause most of the controversy in allocating waterfront recreation space. However, in many cases, a waterfront location may prove to be the only feasible alternative.

COMMON PROBLEMS AND UNCOMMON SOLUTIONS

In attempting to meet the needs for urban waterfront recreational opportunities, many cities have been confronted with a variety of practical problems they have had to resolve. In those cases in which the problems were dealt with effectively, the cities were able to recognize and deal with the diversity of the physical and socioeconomic environments and the complexities of the developmental, political, and institutional realities within their respective situations. The competition for waterfront space among uses, the preservation of historically significant areas, real and anticipated changes in water quality, the protection and enhancement of the waterfront's identity, shoreline erosion and flooding, and the anticipated costs of providing recreational opportunities are the major problems with which cities have had to deal.

Competition for Waterfront Space

The competition for waterfront land and water areas is usually very keen, often between uses that are potentially incompatible. Recreational usage of this limited land and water space must not only compete with other potential uses (e.g., residential, commercial, institutional), but with existing historical uses as well (e.g., transportation, industrial).

The competition for space has led many cities to conclude that many single-purpose developments are no longer feasible. In New York City, for example, a recreational facility is being constructed on the roof of a waste-water treatment facility, and in Chicago, a park is being constructed on the roof of a public parking garage. These are representative examples of the responses to the problem of competition. The concept of shared space might not always be feasible, but human inventiveness and economic realities will continue to find situations in which it will be.

Preservation of Historically Significant Areas

Waterfronts are generally the oldest sections of cities and for this reason are often full of history. The preservation and/or restoration of these historically rich areas add to the amenity value of waterfronts for residents and to the attraction value of the waterfronts for tourists and other visitors.

Conflicts between historical preservation and recreation objectives can cause controversy that delays and often suboptimizes the solution of the problem. The South Shore Country Club in Chicago serves as an example in which a historical landmark was scheduled for demolition by the Chicago Park District to make way for a new lakefront park. The perceived needs of the low- and moderate-income residents in the adjacent neighborhood and the cost of rehabilitating this once grand facility were both factors in the Park District's decision. However, the decision was made to save and rehabilitate the buildings to accommodate many of the neighborhood's needs and to rejuvenate the landscaping of the area to accommodate water-dependent recreation.

Water Quality Changes

The Federal Water Pollution Control Act Amendments of 1972 set a clean water goal for 1983 for most of the waters in the country to be "fishable" and "swimmable." Substantial investments were authorized to construct waste-water treatment facilities ($18 billion) and to control discharges into the country's waterways. As the quality of the waters has improved, the competition for waterfront space has become more acute as residential and commercial enterprises seek to take advantage of peoples' affinity for the amenities available there. As the water quality improves, the demand for public swimming and fishing areas increases.

The Harbor Islands in Boston are an interesting case in point for they have long been an underutilized recreational resource. Although a master plan for the redevelopment of the islands was prepared almost 12

years ago,[12] pressure to implement the plan has just recently reached the point where something is to be done.

Protecting the Waterfront's Identity

Most waterfronts have qualities and a character quite different from the surrounding city that help provide a sense of identity to the waterfront and quite often to the city itself. A combination of activities (processes, movements of people and goods, sailing), structures and places of different scale (transit sheds, high-rise buildings, parks and promenades), and sounds (foghorns, train whistles, sea gull cries) all help characterize the waterfront as a special and unique place. It is also this combination that emphasizes the differences between port cities around the world and suggests the need to protect and reinforce these differences in treating waterfronts as amenity resources. For example, there is some indication that the success of the adaptive reuse of Faneuil Hall in Boston may encourage interests in other cities to utilize the same theme for underutilized parts of their waterfronts. Yet if an urban waterfront is to remain or once again become a working part of the city, it should reflect the unique dynamics of that city. Historic waterfront preservation may be a concept that has value for every urban waterfront, but the form of preservation for each is or should be different—as different as each city's history. In a similar fashion, few cities have the sociocultural and physical dynamics that have made Boston's Faneuil Hall not only a commercial success, but a sensible waterfront development for that time and place.

Getting to the Waterfront

Although providing public access to and along urban waterfront is an admirable goal, substantial problems can result from inadequate considerations of the implications of such a policy upon a city's transportation network. If the waterfront becomes a substantial attraction, various transportation modes (i.e., automobile, public transportation, bicycle, pedestrians) will need to be accommodated. Conflicts between modes are possible and traffic congestion is likely. In addition, there may be conflicts between the traffic generated by the recreational development and that generated by other waterfront uses.

Since transportation is already an important land use on many urban waterfronts, the need for additional space to accommodate parking and increased traffic loadings is an important consideration. As an alternative strategy, however, attempts have been made to make public

transportation more attractive. For example, the Chicago Transit Authority schedules special routings and reduced fares to encourage use of public transportation to the lakefront parks and cultural facilities.

Cost of Providing Recreational Opportunities

A recently published report[13] estimated that approximately $1.2 billion in federal funds was provided to local park jurisdictions during fiscal year 1976 for the development and operation of parks in urban areas. This amounted to slightly more than one-quarter of the total park and recreation expenditures within urban areas during the period. Even with these substantial expenditures, there were so many examples of deferred maintenance and programmatic cutbacks that Congress authorized the Urban Parks and Recreation Recovery Program in late 1978 to combat these problems. Even with this help, decisions in many park agencies these days do not involve new facilities or programs to develop, but are directed at whether to purchase heating fuel to allow an indoor facility to operate in the winter or chlorine to allow a swimming pool to operate. Residents of most cities assume they have a right to a certain degree of recreational service since they pay taxes, but the cost of providing that service is increasing faster than tax revenues that pay for it. Possible answers to this problem are dealt with in detail in the next section of this paper.

THE WATERFRONT DEVELOPMENT PROCESS

APPROACHES TO PHYSICAL DEVELOPMENT

There are at least five distinct development strategies that are presently being utilized to provide new recreation space on urban waterfronts. First, urban renewal is used to acquire and raze obsolete forms of development and replace them with recreation and open space. This strategy is often used in a situation where a waterfront is blighted and both functionally and economically obsolete. Some of the advantages of this strategy include the ability to salvage blighted areas, the potential incentives it provides for private investments nearby, and the ability to optimize the use of the available land space. Some of the disadvantages include the loss of land from the tax rolls if areas are to be used for public purposes, the possible changes in the character and identity of the waterfront, and the possible prohibitive expenses involved. The Detroit riverfront provides an excellent example of this approach with its

proposed linked park system[14] as does the redevelopment of Baltimore's Inner Harbor.[15]

A second strategy involves the adaptive reuse of structures and/or areas to transform obsolete or dysfunctional elements of the waterfront into vital working ones. This strategy is often used where the waterfront contains significant historical resources or where a goal is to protect the waterfront's heritage. Some of the advantages of this strategy include the ability to recycle and conserve limited resources and the ability to preserve and enhance the waterfront's identity. Some of the disadvantages include the usual inadequacies of the existing infrastructure and the questionable cost effectiveness. This technique was used in Chicago, for example, to turn Navy Pier, a major marine terminal, into a recreational and cultural facility.[16]

A third strategy involves waterfront expansion where land and water space needed for recreation are developed through some type of environmental modification. This strategy is often used where the available waterfront land is limited and its acquisition for recreational usage appears infeasible. Some of the advantages of this strategy include the ability to create space with suitable recreational attributes and at a cost less than that to purchase, the ability to overcome other waterfront problems such as erosion and flooding, and often the ability to benefit other public and private projects by providing temporary disposal areas. Some of the disadvantages include the possible need to expand the capacity of existing utility infrastructure, to deal with cumbersome and costly environmental regulations, and to overcome potentially hostile public attitudes, and the possible extent and degree of the environmental impacts. The several recently constructed parks along the Toronto waterfront[17] and the Battery Park development along the Hudson River in New York City[8] are prime examples of this technique.

A fourth strategy involves the development of multipurpose or shared facilities where some waterfront recreational objective is met while some other development purpose is served as well. This strategy is just starting to be used in the United States where space is limited and demand is great. Some of the advantages of this strategy include the ability to efficiently utilize limited space and resources and the ability to share construction and operational costs. Some of the disadvantages of this approach include the need to change mandates/authorities of existing governmental agencies and to overcome the questions of liability for damages. The greenway along the Merrimac River in Lowell, Massachusetts (where a pathway is being developed as part of a water pollution control project) is an example of this technique.

A fifth strategy involves the provision of public access to the

waterfront and public open space as part of a commercial development. This strategy of providing easements is often used as a stipulation of approval for private development adjacent to public resources. Some of the advantages of this strategy include the ability to keep land on the tax rolls, the ability of the property developer to realize some type of economic advantage, and the minimal requirement for a public investment. Some of the disadvantages include the exposure of the owner to liability in some circumstances, the limited types of uses deemed appropriate in such cases, and the question of responsibility for maintaining the publicly used space. The promenades along the Chicago River[18] in Chicago and the San Antonio River in San Antonio[19] are both examples of this technique.

FINANCING WATERFRONT RECREATIONAL DEVELOPMENT

Numerous strategies have been used to finance the development of waterfront recreation space and still others, though untried for recreation, are used for other public purposes. Some of the more traditional finance techniques, including revenue sharing and grant funds, are already over-taxed in most municipalities and are only mentioned here in passing. Still others are discussed here only in hypothetical terms when no examples are available. Several special examples are discussed in detail to show their transferability.

The first strategy to be considered is the issuance of local bonds to finance projects: general obligation bonds that are paid back by general tax revenue and revenue bonds that are paid back by leasehold or user fee revenues. This strategy in a slightly modified form was used by San Diego in the construction of Mission Bay, a major water-oriented recreational complex. In this case, the City of San Diego leased part of the land and water area to specific types of commercial operations (e.g., marinas, marine land, hotels, restaurants), the revenues from which are then used to support general waterfront recreation on the remainder of the site at no cost to the San Diego taxpayer. This same strategy backfired in Marina Del Ray (near Los Angeles) when what originally started as a development in the same mold as Mission Bay evolved into a massive commercial operation of limited value to the general public.

A second strategy that has been used successfully involves the use of zoning authority along with a technique popularized in the execution of conservation easements. In the case of the South Street Seaport Museum, the City of New York established a special zoning district in an 11-block area in southern Manhattan. Within this district the museum may transfer the development rights of its properties to some other properties

and utilize the resulting revenues to renovate the historical buildings and other areas it owns. The recipients of the development rights have been able to increase the floor area ratios of their properties to 21.6.

A third strategy that has some potential involves the manipulation of various types of taxes. For example, the metropolitan area of Minneapolis-Saint Paul has adopted a strategy of tax sharing in which a limited metropolitan-wide tax base was established and any cumulative area-wide tax increase within the area is shared among all jurisdictions. A second example involves tax increment financing in which bonds are sold to be repaid with tax increments from redeveloped projects. A third example involves use tax (e.g., parking tax to encourage use of public transit, hotel tax) that can be earmarked for specific purposes. A fourth example involves tax incentive or credit against taxes for providing an easement for some public purpose.

A fourth strategy, which has been proposed in Michigan, involves the use of unclaimed deposits on bottles and cans as a source of revenue to pay for urban park development. This strategy, which involves the enactment of controversial legislation (i.e., the requirement of returnable bottles and cans), has merit, but is an unknown at this time.

There are some notable federal grant programs that have been used, or are anticipated to be used, to fund various stages of the development process. The U.S. Office of Coastal Zone Management has funded numerous research and design studies that have focused on urban waterfronts under the provisions of the Coastal Zone Management Act of 1972. The U.S. Army Corps of Engineers has supported harbor cleanup operations (snagging and clearing) under the provisions of the River and Harbor Act of 1899. The U.S. Heritage Conservation and Recreation Service administers four programs: two have been used to acquire and rehabilitate waterfront property (i.e., Land and Water Conservation Fund Program, Historic Preservation Fund Program), and two new programs offer much promise (i.e., Urban Parks and Recreation Recovery Program, Maritime Preservation Program). The National Endowment for the Arts, through its Environmental Arts Program, has also supported waterfront design activities. Finally, the U.S. Department of Housing and Urban Development has supported waterfront redevelopment through its Urban Development Action Grant Program and its Community Development Block Grant Program.

INSTITUTIONAL COOPERATION AND COORDINATION

One of the key differences between the success and failure of proposed waterfront recreational development appears to be the degree to which

there has been coordination and cooperation associated with the project among the various institutions involved. Intergovernmental cooperation and coordination and cooperation between the public and private sectors are three important areas of consideration.

There are several examples in which intergovernmental cooperation has been a key factor in completing a project. For example, in carrying out the proposed Battery Park City development in New York City, action was needed (and was taken) at three levels of government. The U.S. Congress declared the Hudson River where the fill was proposed as nonnavigable; the state of New York legislatively established the Battery Park City Authority; and the City of New York created a special zoning district. Although the project is incomplete at this writing, the landfill and platform construction have been completed.

A second example of intergovernmental cooperation is demonstrated by the Toronto waterfront. The collective efforts of four governmental entities have produced a substantial recreation resource that is the envy of many cities. A combination of local (City of Toronto, Toronto Harbor Commission), regional (Metropolitan Toronto and Region Conservation Authority), provincial (Ontario), and national agencies have worked together to establish a waterfront recreation system composed of man-made islands and peninsulas and recycled buildings.

Intergovernmental coordination is another key to successful projects. However, only limited coordination has occurred to date between federal agencies, and much of the success of waterfront redevelopments has happened in spite of federal initiatives rather than because of them. This situation appears to be changing, however, as memoranda of understanding are developed between agencies and joint activities are initiated. A notable example of this is the joint activities of the Heritage Conservation and Recreation Service and the U.S. Environmental Protection Agency.

Cooperation between the public and private sectors is another key to success. One prime example is the Grand Street Waterfront Park in the Williamsburg section of Brooklyn. New York City leased a deteriorating and unused ferry slip to a neighborhod group for $1.00 per year, which, with the assistance of the New York Parks Council, raised the funds and volunteer labor to transform the blighted area into a popular street end park.

Another example of such cooperation is reflected in the program to develop a riveredge promenade along the Chicago River in Downtown Chicago. Private landowners are working with the City of Chicago to design and construct a network of plazas and walkways that will allow the public an opportunity to view and enjoy a working river.

FUTURE PROSPECTS

EVOLVING WATERFRONT FUNCTIONS

An analysis of the history and recent trends in waterfront development and redevelopment leads to a conclusion that the future holds both problems and opportunities. It is anticipated that:

- The percentage of older people will increase.
- There will be increases in blocks of leisure time.
- Recreational preferences will continue to change.
- Increases in the cost of energy will result in an even greater use of close-to-home recreation space.

All of these elements will affect the demand for waterfront recreation space.

The following is a set of elements that will affect the availability of waterfront space for recreation in the future:

- The competition for urban waterfront space will become more acute as environmental and economic conditions change.
- The importance of ports as a waterfront use will wane in some cities and become more important in others as containerized cargo increases lead to a smaller number of larger ports.
- Waterfront rejuvenation will continue so long as the private investors continue to reap reasonable profits.
- The incidence of multipurpose or shared waterfront facilities will continue to increase with recreation often being one of the purposes served.
- New waterfront lands will be created through landfill and other environmental modification techniques so long as the construction costs remain lower than the acquisition costs of existing lands.

EVOLVING GOVERNMENT ROLES

It is anticipated that the relative roles of governments will change in the foreseeable future. Cities, especially the older ones, will look to the state and federal governments for assistance. In addition, environmental regulations at all levels of government will continue to get more complex, making it more difficult to initiate large-scale projects. The following is a set of elements that describes this changing government role:

- The federal government and some states will enact measures to support the financial underpinnings of cities, especially the older ones.
- The federal and state support for the development and operation of urban parks, including waterfront parks, will continue to increase.
- The cities will increasingly look to property owners to provide public access through and public space within their holdings through the use of incentives and regulations.
- Regulations governing air and water quality will become more strict, especially at the federal level, resulting in a more tortuous project approval process.
- The federal government will attempt to facilitate efforts to jointly fund waterfront projects.

CHANGING ECONOMIC SITUATION

In order to respond to the increasing demand for publicly financed recreation opportunities, it is anticipated that many cities will be confronted with some very basic and hard decisions in the future because of the relative low priority given to recreation in budgeting public expenditures. The following is a set of elements that will affect the economics of waterfront recreation in the future:

- Large-scale recreational developments and redevelopments will need to be self-supporting as more and more of the limited funds available for recreation will go for the programming and maintenance of facilities.
- The temptation will increase for cities to commercialize their waterfronts as a source of revenue to assist in dealing with other expenses.
- The cities will be expected to play a stronger role as a provider of recreation as the economic viability of commercial recreation erodes and the user fee will be applied more and more to support this expanded role.
- Historic preservation and adaptive reuse of facilities and areas will increase as a strategy as the cost of new construction escalates.
- Many local recreation and park agencies will have to make some difficult decisions regarding the curtailment of some services and the expansion of others, with waterfront recreation competing with other facilities and areas for the limited funds.

In conclusion, urban waterfront recreation is and will continue to serve as a force in the rejuvenation and expansion of urban waterfronts. These recreational developments will take advantage of improving

environmental quality, but in turn will be subjected to stricter environmental regulations. There is an opportunity for cities to learn from one another, but they must refrain from aping the successes so that the "identity" of each waterfront city will be preserved.

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Citizen Groups: New and Powerful Participants in Urban Waterfront Revitalization

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SUMMARY AND CONCLUSIONS

Urban waterfront reuse activity has come increasingly into the spotlight since the beginning of the 1970's. Perhaps the greatest impetus for focus upon the urban waterfront, especially in the northeastern United States, has come from the anticipation of oil and gas discoveries in the Baltimore Canyon. Not until this eventuality occurred did many people among the public at large bother themselves with the urban waterfront. To the average person the waterfront was not a place that was being threatened by any kind of development. It was just there slowly decaying into the water; almost by accident a place opened up to public access due to the departure of factories, railroads, and shipping lines. The urban waterfront was, by default, a place where people went (in many instances illegally) to fish, swim, or just sit and enjoy the view and the spaciousness of it all.

Not until proposals were made for its reuse did the general public become involved. In most cases they became participants in land-use decisions because they were alarmed at the types of facilities being proposed. These were mostly (in the early 1970's) schemes for oil refineries, desulfurization plants, and petrochemical storage facilities. The chief aim seemed to be the rededication of the urban waterfront to another 100 years of heavy industrial usage and, by extension, exclusion of people. The end result appeared to be a continuation (if not an increase) in air and water pollution levels in the already-degraded cities.

The specter of fire and explosion in facilities (sometimes proposed for siting merely a few thousand feet from homes and businesses) was a frightening one. The prospects for a better future in many urban waterfront communities would be blotted out and the cities could never come back as good places to live if these projects materialized.

If these installations had been proposed in the suburbs or rural areas, there would have been anticipated an instantaneous chorus of angry and indignant voices raised in protest. Hardly anyone (the city fathers among them) anticipated any resistance from the poor and deprived in already-ruined riverfront cities. They received the surprise of their lives.

CITIZEN ACTIVISM AND THE CITY

Out of the faceless and nameless mass of population in many an urban area came a handful of citizens who banded together for psychological support and political effectiveness in order to examine these proposals. Out of the review came facts, from the facts came possible impacts, and from a realization of impacts came protest. The urban waterfront cause had been born.

This paper on citizen group activity recounts from both personal experiences and professional research the rise of riverfront city inhabitants as vital players in the new game of urban reuse of the waterfront. Attempts at energy facility siting were major factors in the dawning awareness on the part of the public that the urban waterfront is an endangered natural resource. Numerous attempts to site energy facilities on the waterfront led the public to demand an existence other than that of living in a "tank town." The urban population wants something better for itself and its city.

The main points that must be made are:

1. The city is a special place in the minds of its inhabitants.
2. The waterfront is a special place in the context of the city.
3. The citizens' hopes and plans for their city and its waterfront are critical elements in land-use decision making.

Citizens band together in order to be heard now—today—on issues that will be decided tomorrow and that will evoke consequences on urban life for years to come. The "numbers game" is an important aspect of citizen group activism, especially in areas where the political machine has held undisputed sway since the turn of the century.

The citizen group also performs as researcher, stimulator, and

organizer. It takes on the task of sharing the facts and urging the public to respond. Such activity occurred as early as 1970 in a 1.3-square-mile, densely populated city in New Jersey called Hoboken. There a citizen group led not one but two successful battles against energy-facility siting. They made a place for the citizen at the decision-making table. A brief recounting of the Hoboken Environment Committee's activities may be found in the third section of this paper.

A DIFFERENT PLACE, A DIFFERENT FIGHT

Once they focused on the riverfront down by the dilapidated piers and the abandoned factories, many citizen groups discovered a place of calm and openness, freedom and hope not found anywhere else in the overdeveloped city. It was a precious place that held the promise of a better tomorrow.

The citizen groups learned very rapidly that many other people in cities elsewhere in the region were concerned about the urban waterfront. Riverfronts, it was discerned, were regional in scope. In fact so multifaceted and far-reaching were the effects of riverfront activities, that county, state, and even national citizen groups would join the cause to protest degrading waterfront uses in a specific locality.

The local citizen group, however, was in the fight not just to protest but to gain a hearing for the people of its city about how the waterfront and the city itself should be developed. The drive behind many urban citizen groups is a deep faith in the city and a determined hope that it will become a better place in which to live. The key to urban waterfront issues is that desire for a better city, and by extension, for a better waterfront.

The special nature of the urban waterfront as a unique place in the context of the city makes for a special kind of cause with a different and variegated constituency. The governmental review and permit structure involving local, regional, state, and federal agencies adds to the peculiar direction that a waterfront battle takes. It is almost scattershot at first glance, so diverse are the activities that are required to cover all bases. This same diversity, however, tends to involve more people and gain for waterfront issues the avid attention of the press. The more press attention, the more important the cause becomes. The fourth section of this paper attempts to cover the factors touched on above that make the urban waterfront cause a different one from that of all other citizen campaigns.

ISSUES OF CONCERN

The fifth section of this paper addresses the issues of concern themselves. As may have been discerned from the preceding paragraphs, the concern about urban land use in general and the waterfront in particular is the main issue. The waterfront in many river cities is the area that provides the only empty and unused land in quantity. It is the place where the businesses, jobs, homes and amenities of the future should be placed, but it demands compatibility of uses. Homes and heavy industry cannot be neighbors.

This desire for a waterfront of new uses is part of a whole plan for "saving the city." To reattract a middle class, even to lure new businesses, the urban atmosphere must be made more pleasant and more welcoming. Clean air, amenities, and good-looking physical appearances are necessary. Park settings for buildings, parks themselves, and recreation facilities all provide the niceties that create the impetus for re-entry of people and investment into the urban orbit. Without these features the cities cannot be "saved."

For the lead citizen group in waterfront campaigns, the issues are first formulated as impacts. The impacts (issues) are then utilized to attract various other groups to the hustings. There are distinct issues (and now always the same ones) that are of paramount importance to particular citizen groups. For instance, the historical society and cultural council will respond to aesthetical issues as a main concern. The concern of broadest appeal (as distinguished from the major issue of land use), however, is that of safety and health. Everyone can relate to the threat of fire and explosion. The safety issue has been a great persuader.

The next issue of popular concern is that of environmental degradation, especially as it relates to the association of pollution with cancer. Urban areas tend to be cancer-ridden and any facility that might increase the threat of cancer is a target for protest.

Environmental concern is also an issue wherever pollution levels are already reaching the saturation point. Many urban areas fit into the air quality category of the "worst in the state." Anything that will make air quality worse is a just cause for alarm.

Interest in the number of jobs that a proposed facility will provide is natural in areas where unemployment is chronically high (the cities). When job-to-land-area ratios are low (one job in 50 acres is not unusual at energy facilities), the desire to support such a new industry suddenly lessens.

Cost-benefit analyses of projected municipal costs also create areas of

interest. Where projected ratables are canceled out by costs, the last vestiges of support for a proposed facility will evaporate.

The issue of aesthetics provides an interesting one for it is both personal and civic-oriented. The protection of views and vistas is certainly aimed at personal enjoyment. However, the citizen group also puts forth a case for the preservation of views as a means of luring developers and of increasing the value of waterfront land. Views over water are money in the bank and should be exploited.

CONCLUSIONS

Many facilities (especially heavy industrial) have been proposed for urban waterfront areas since the early 1970's but few have been accepted. The reason in many instances (in *all* instances in Hudson County, New Jersey) is that the citizens rose as one to protest.

Governmental attitudes toward the citizenry accounted for the intensity of the protest in most cases. When government decides what is to happen even before public hearings, there can be little doubt about disregard for citizen opinion. Most times the disregard begins at the local level. It advances even to the pinnacle of the federal government. The unwillingness to share information and the results of government research is a major indication of governmental disdain for the public. Government must gain the ability to share. It must also learn to listen to citizen comment and to distill from the emotion and attempts at rhetoric the value system of the speaker. Only in perceiving that set of values can sound decisions be made, can adjustments be made, can justice be done.

The citizen cannot, however, be brought in at the last minute as a token. In this time of just-emerging interest in waterfronts, new mechanisms of decision making should be evolved that would incorporate from their inception a place for the citizen. The most appropriate level for such decision is the regional one. Regional planning and implementation councils should provide seats for citizens as well. Local land-use planning boards should set up citizen advisory groups. Plans should be aired for general public consumption and comment made at all stages of the planning process—not just at the end.

New modes of funding for urban waterfronts should also be sought. These modes should incorporate citizen comment and involvement as a requirement of the funding process. The Department of Housing and Urban Development (HUD), which has sponsored so many of the successful urban housing programs with innovative financing, coupled with citizen input, provides a possible model for administering such programs.

The citizen group itself is not without obligation in this matter of the waterfront. It bears an awesome responsibility to act in a mature and rational manner. The citizen group must learn to discern the potentialities of development, create alternatives, and seek professional advice. It must learn to communicate and work with government and developer alike.

It must be understood that neither the voice of the people nor the dictates of government are sacrosanct. There must be a wedding of ideas and desires by both sides. It will not be easy. It takes a lot of patience, time, and understanding to make a marriage work, but work it must if the urban waterfront is ever to live up to its vast potential for bringing the cities back to life.

INTRODUCTION

The role of the United States citizen in decision making has traditionally occurred at third hand, i.e., in the polling booth. This was and is by design, for the United States is a republic not a democracy. The process, however, does place the average citizen at a definite distance from involvement in discussion of issues and decision making itself.

First, the voter pulls the lever for someone he "trusts" will respond as the voter himself on current issues and those issues that may arise in the future. Second, the voter is opting for representation from a person he "hopes" will be approachable and responsive when issues require direct expression of desires. In either instance, the voter has tended to leave actual decision making to an elected representative—for good or for ill. The often-mentioned option of "voting an official out of office" in 2 years is scant satisfaction when the decision is to be made tomorrow and the ramifications are to be felt for years. The damage is long done before the citizen can exert his opinion of ignoring a candidate for re-election. Many a voter has decided that there must be a better way.

That better way has proved to be group activism. Citizen group activism, just as much as the political party system, reflects the structure of the U.S. elective process. The "group approach" is the citizen's attempt to influence politics, for a group represents a block of votes as a threat or a promise that can be manifested today–not perhaps 2 years from now in the polling place.

Citizen group activism is a creature born of the political process for the purpose of affecting political decision making, and it has influence, especially since the student and Black movements of the 1960's. Even the normally conservative urban dweller has come to understand that organized protest, if not always completely successful, can achieve a

public hearing for a cause. Watergate further underscored the validity of investigation and criticism of the power structure as an honest endeavor.

Still other factors fell into place in the 1960's that have made the world of the 1970's safe for group activism. Popular acceptance of environmental and safety issues has made it clear that these issues are not the exclusive concern of the "little old ladies in tennis shoes." Rachel Carson convinced the world that we had to fight to preserve our planet. Ralph Nader fought a corporate giant and won. America seemed to awake one day to a world of opinion that said that protest was not only possible but acceptable.

In many urban areas—especially where politics still reigns in the form of the party machine—small groups of people saw a chance to create change. These groups looked about, saw the issues that needed to be addressed, and then took to the ramparts.

A CITIZEN GROUP'S IMPACT ON WATERFRONT DECISIONS

HOBOKEN, NEW JERSEY: A BRIEF HISTORY

Hoboken, New Jersey, is a city of 1.3 square miles that lies directly across a 4,000-foot expanse of the Hudson River from New York City. It has a mile-long shoreline that was once the focal point of this blue-collar, industrial community of 45,000 people. The 1950's brought the gradual disintegration of the waterfront as factories, railroads, and shipping lines moved out. The City turned in on itself. Hoboken, by the late 1960's, was a river city that had lost its waterfront, its source of vitality. All that was left for Hoboken were the problems.

In 1971 a housing study described Hoboken as having the poorest housing conditions in all of Hudson County.[1] Substandard and overcrowded housing accounted for 28.7% of all occupied units. To add to the picture of dilapidation, 90 percent of this housing was noted as having been built prior to 1910.

Other sources showed unemployment levels as high as 20 percent (November 1975).[2] The City's figure in this regard has remained consistently above the county, state, and national levels. Not too surprisingly, the 1970 census listed 21 percent of the population as living below the poverty level. The median educational level was merely 8.7 years (the lowest of any city in the state with 10,000 population and over).[3]

In addition to all of these social and economic problems, Hoboken also experienced some of the worst air quality in a state known for its

lack of pure air. Hoboken ranked in first place in a particulate emissions study in 1969[4] and shared with its neighbor Jersey City the distinction of having the dirtiest air of 20 New Jersey cities.[5] (When 113 days of the year are "unhealthy" and another 172 are "unsatisfactory," the area can hardly be considered the flower of the Garden State.)

Besides all of the above, Hoboken had (and still does have) the highest tax rate in the state. In the early 1970's it also had some of the lowest property values in the county.[6] Without a doubt, Hoboken gave every appearance of a classic study in desperation.

Into this problem-ridden, depressed City came the energy business in 1970 with a proposal to establish an oil desulfurization plant on the waterfront. The mayor of Hoboken and the City Council welcomed the facility with its projected $1 million tax ratable. Due to foreclosure procedures, the City owned a 40-acre area on the waterfront. This was the first offer for its reuse. In addition to the poor air quality, the City already had noise, congested streets, and what seemed to be a despondent and despairing image of itself.

All of the requirements for the imposition of what has come to be known as an "urban growth policy" were in place. With the U.S. Environmental Protection Agency and the N.J. Department of Environmental Protection just gearing up but not quite ready with standards for air and water quality control, everything looked right. However, from January to July 1971, it all went wrong.

A small group of citizens who called themselves the Hoboken Environment Committee decided to ask questions. They wanted to know what the environmental, social, and economic effects of the plant would be. They investigated and contacted state and federal agencies. They researched and brought in scientists and engineers from Stevens Institute of Technology (based in Hoboken) to review the material they had unearthed. When all this had been accomplished, the committee decided to publicize the findings and oppose the facility.

The method of opposition involved contacting the press, lining up speaking dates at local clubs, passing out fact sheets on street corners, convincing neighboring city administrations to oppose the facility, and organizing a county-wide protest with the help of citizen groups from other communities.

In May 1971 the mayor of Hoboken withdrew his support of the facility when a city ward-council election—in which the desulfurization plant had been a key issue—brought the defeat of those who supported the facility (a rare example of an election occurring at a crucial time). The people of Hoboken had defeated this facility and, perhaps unknown even to themselves, had started to articulate for the very first time in at

least 40 years the kind of city they wanted. The opportunity to be even more vocal was soon at hand again.

In 1972 another energy facility proposal was made for the same waterfront area. This time it was to be a 17-tank oil-storage facility with a 3.8-million-barrel capacity but fraught with less danger, less pollution capacity, and less demeaning aspects than the desulfurization plant just defeated. Once more the city fathers welcomed the developers, and deeds were signed. The N.J. Department of Environmental Protection seemed receptive, and the U.S. Corps of Engineers and the U.S. Environmental Protection Agency were not saying no. Again everything looked right, yet again everything went wrong for the developer.

The Hoboken Environment Committee moved into action—researching, contacting governmental agencies, gaining expert scientific advice and comment, demanding environmental impact studies and public hearings. It took the committee 3 years of effort, four public hearings, and thousands of hours of organizing and campaigning to defeat the project, but defeated it was. The final blow was administered by the N.J. Natural Resource Council (a state council appointed by the governor to decide upon riparian land uses in the state). Even though the commissioner of the N.J. Department of Environmental Protection (in which the council operates) urged the council to bring in a "speedy and affirmative" decision on behalf of the facility, the council decided unanimously to refuse the issuance of a riparian permit. It defeated the project because it was concerned about "safety, health, economics, and aesthetics."[7] The council noted that these were what it perceived to be the dominating concerns of the citizenry that came before it at a public hearing and that the council agreed with that public concern.

Safety (hazard of fire and explosion), health (threat of air and water pollution), economics (low job-to-land ratio and increased municipal expenditures) were all understandable. Aesthetics, however, raised some questions. The title may have been misleading for the factors listed under "aesthetics" dealt with more than just appearances and the view of the New York City skyline. The heading might have been more explicit if it had been termed "land-use and urban conservation."

The use of this portion of the Hoboken waterfront for oil storage was criticized as "[not blending] in with a documented redevelopment plan for the area." It was noted that the City was rehabilitating its housing (by 1975 when the oil-tank decision was made 16 percent of the City's housing units had been "rehabed"). The historical significance of the area was also noted as another reason to eschew an oil-tank installation.

Members of the Natural Resource Council, at their decision-making meeting in December 1975, congratulated the Hoboken Environment

Committee and the general public for having presented such a factual, well-documented, and well-argued case for their review. An editorial in a local newspaper credited the Environment Committee with the leadership and spirit that had brought a "successful" conclusion to the land-use battle.

An educational process had occurred during the course of the tank-farm affair. The mayor of Hoboken was moved to say after several public hearings:

> It is obvious from the reaction of the public . . . that ratables are not always uppermost in the public's mind.
>
> [The public hearings] have me convinced that our citizens are willing to bite the bullet now if it means we might have a chance at a better all-around use of that area at a later date.[8]

THE URBAN WATERFRONT: A SPECIAL ENTITY

Is it possible to differentiate the waterfront revitalization cause from that of other citizen causes? Does the urban waterfront call forth a different type of citizen effort?

The cause of the urban waterfront, in general, may be considered one that is sufficiently unusual, with regard to place, scope of effect, and method of procedure, as to respond definitely that the urban waterfront cause *is* different.

A DIFFERENT PLACE

One of the leading factors that separates the riverfront (or lakefront and/or oceanfront) cause from all others is the physical appeal of the location itself. Waterfronts have been called romantic, sexy, even mystical kinds of places.[9] They are places for dreaming and recreation. The feelings of openness, of freedom, and of calm are all sensations felt when contemplating a riverfront. Surely the very expanse of water that is spread before the viewer creates many of these feelings.

In the built-up environment of a city the presence of water is a particular attraction. In the city, in addition to the sense of openness, the river holds out the lure of faraway places and the hope of better times, of a better life. The ancient Greeks, Thales of Miletus[10] in particular, credited all creation and its continued revitalization to water. Although modern humankind may be loath to make such attributions to the element of water, there is an admitted sense of hope, excitement, and expectation to be found even along the dirty, oil-slicked, decaying

lengths of an urban waterfront. It is a place different from other places. It is special.

Waterfronts, with their sense of openness and freedom, also tend to be everybody's place.[11] No matter how excluded the public has been from the waterfront, especially during the last century, it is still considered to be the domain of the public. English law consigned riverfronts to the jurisdiction of the crown in the name of the people. Today riparian laws in many states gain their validity from this old doctrine.[12]

The riverfronts are so vital, so important, and so far-reaching in the impact of their uses that they gain a stature far exceeding that of other physical locations. Riverfronts are not just local in scope; they are regional places for they link one city to another. Riverfronts contain a ribbon-like pattern of uses the effects of which are felt for miles. The water itself carries the residue of usage from one place to another. Besides being areas of public domain, waterfronts are also neighborly frontiers that must be handled with care and sensitivity.

The most obvious natural feature of riverfronts is that they bring wildlife right to man's doorstep. Rivers are frequently estuaries that become the bedrooms of the oceans. Here fish mate and spawn, gain strength and leave, according to the season. Man's actions in disposing of waste (and the far-reaching effects this has) have only recently become a cause for concern. The rivers of U.S. cities are beginning to be rejuvenated but only because of an increasing awareness that the rivers are natural resources that need to be cared for and protected.

The readily accepted activities of man along urban waterfronts over the past century have tended to make people unthinking about this natural resource. In fact so built-up, so manmade have the urban waterfronts become during this period that it seems odd to hear the area termed a "natural resource" at all. Railroads, docks, and factories have consumed such large sectors that most city folk have forgotten there is something out there called a river.

The exclusion that has resulted from these industrial barriers has brought about the erroneous conclusion that people in cities do not care about their waterfronts. It would appear to be logical to assume that since the public has been excluded for so long and has said nothing, nobody must care. Since cities have allowed their riverfronts to deteriorate so badly, they must view the areas as poor and beggared places. Unfortunately, for many potential developers that assessment of the waterfront and the public's view of it are quite inaccurate. What these developers (and in several cases the city fathers and state officials) have overlooked is that there is a paradoxical situation on the

waterfronts and in the cities of this country that will continue to influence decision making in the future. Now that new technology has led to abandonment of the old waterfronts, and a wealth of choice has created an option for suburban and rural spaces, waterfronts have been emptied. The forces of economics and technology have done it. This very emptiness, however, has allowed the public to go back to the riverfront. For the first time in a century, many city dwellers have discovered the charm of a river. There is an ever-growing conviction that never again will the people be barred from *their* waterfront—that it will be different this time.

THE CONTEXT OF THE CITY

Added to this sense of dedication to a waterfront-for-people is a new, positive philosophy about the city itself. A great number of people who live in old urban areas may be poor but they still have the desire for a better life. This resolve for something better in a river city is one of the keys to why urban waterfront issues are so different.

The word urban in a larger than grammatical sense modifies and expands the idea of waterfront; it makes the waterfront issue what it is. Until that fact is understood there can be no comprehension as to urban waterfront issues. It is the inhabitants' overall perception of their city that forms the foundation for urban waterfront revitalization. People want to be proud of their city; they want it to be the best that it possibly can be.

The urban waterfront is a special place in a special context. The waterfront must be seen as an integral part of city life—as vital and personal a part as housing. The city must respond to the wishes of its people if it is to prosper; so must the waterfront.

A DIFFERENT FIGHT

The urban waterfront, then, encapsulates a unique appeal, a vast area and a position in city dwellers' minds as a place of prime hope for a better urban future. All of these factors combine when proposals for waterfront development are made. When those proposals are deemed to be harmful to city life, people care enough to fight. The battles, like the waterfront itself, are also different from other citizen confrontations with power.

Varied and Different Constituencies

The proposal for a discrete site will affect places other than that reviewing the project. This calls into play constituencies other than just local ones; state and regional groups join in.

The appeal of the waterfront is so general that environmental, civic, ethnic and even political groups work together (with a unity of purpose seldom found in other causes).

The press tends to be more attentive to waterfront issues simply because they are so far-reaching in scope and attract the support of so many segments of society. The more press attention, the larger the issue looms. Waterfront issues make for good press.

Jurisdictional Diversity

A battle over an urban waterfront proposal is played out in numerous divisions of government. This multileveled and many-faceted type of battle has brought defeat to many an energy facility siting plan. In some instances the sheer time-consuming aspects of hearings and multiple permit-seeking activities have forced developers into near bankruptcy. Time is, indeed, money.

In all waterfront developments, federal, state, regional, and local reviews are necessary. All of these reviews offer the astute citizen group the opportunity for still one more hearing. The oil-tank storage facility proposed for Hoboken, mentioned in the third section of this paper, involved reviews by at least eight governmental agencies and commissions toward the goal of receiving at least 16 permits.[13] In addition, letters of approval were requested from regional and county planning boards and commissions. Such a diversity of approvals is seldom, if ever, required for other proposals including highways or airport construction. This multiplicity of reviews is one of the major differences between waterfront issues and others.

Another factor of difference in a waterfront issue is the confusion about who or what agency finally has the decisive vote.[14] In waterfront matters, especially in New Jersey, the procedure of decision making is marked by one level of government after the other seeking to pass on the final decision to some other division. The citizen group, therefore, has the harder task in that it must cover all bases equally well—a procedure that requires much time and many people.

The confusion about who has the last word also fans the fires of anger. Waterfront issues tend to become exasperating because they appear to be diffused on purpose just to confound the citizenry. Emotions ride high

on waterfront issues because of location; government, by being nondirective and indecisive, brings even more emotion into play.

Urban waterfront causes create a unique type of campaign, due to the setting of the city and their wide and diverse appeal, as well as the multilayered review process required by government.

ISSUES OF CONCERN

When dealing with urban waterfronts the issues might better be labeled impacts, for it is in the assessment of impacts that the issues are born. Since the impacts of any waterfront development are as vast as the physical scope of the riverfront itself, the issues are many.

THE MAJOR ISSUE: URBAN LAND USE

One issue or impact stands out above all others: urban land use. It is one that is not immediately discernible because there are so many impacts that have to be reviewed. The urban waterfront land use issue is analogous to the "can't-see-the-forest-for-the-trees" syndrome. It frequently goes unrecognized until after the fight, until one withdraws sufficiently to view the results from a distance. The multiplicity of impacts tends to obfuscate this basic concern.

It is the skillful citizen group, though, that immediately recognizes this major issue and uses it. Recognizing the land-use issue opens up the opportunity not only to protest, but to offer ideas and suggestions for alternative waterfront uses. The land-use issue, therefore, provides the chance to ameliorate the negative thrust of protest with positive suggestions. In addition, it offers the chance for the citizenry to voice and to have heard its desires for the future of the city—a major accomplishment in itself.

The first citizen group in Hudson County, New Jersey, to discover and fully explore the potential of the land-use issue was the Hoboken Environment Committee. When faced with a public hearing before the State Natural Resource Council, the committee compiled a 90-page document that assessed present land uses in the affected area and projected future uses based on the long-term needs of the city and region. The chairman of the Natural Resource Council later noted that this study and its conclusions were a major reason for the rejection of the oil tank farm proposal.[15]

As touched upon briefly in the fourth section of this paper, a major factor that separates the urban waterfront cause from other citizen causes is the context of the city itself. It is crucial to know how citizens

think and feel about their city. These are substantially different thoughts and feelings from even 10 years ago, perhaps because of the national (and in some instances, state) focus upon urban revitalization. The "Save the Cities" movement has had an effect upon the outlook of urban dwellers.

In almost every old inner city in the country, one can see the attempts at, if not the results of, urban renewal, neighborhood development programs, and community development efforts. In some cities the Model Cities programs were added. Though city dwellers were many times suspicious and even downright critical of most of the aforementioned programs, they came to realize that their cities were in the spotlight. In many places, such as Hoboken, there were even visible successes. Entire blocks of substandard tenement housing were rehabilitated for low- and moderate-income families. Neighborhoods of sturdy four-story homes were restored through the efforts of "brownstoners" aided by low-interest home improvement loans from the city. By 1978 Hobokenites could *see* that 25 percent of the city's housing had been renovated and repaired. Such visible successes led to an improved sense of hope and a rise in the level of expectation. The "impossible" just takes a little longer to achieve.

Many of the urban successes in housing occurred due to the vital involvement of the citizenry itself. Brownstone movements emanate from the faith of people in their housing. Historic site designations and historic distict commissions arise because the citizenry sees these activities as a means of attaining distinction and status for a "new" city image.

The urban dweller, more than anyone else, knows the drawbacks and the discomforts (as well as the joys) that city living can create. In many cities, either due to a genuine love for cosmopolitan life-styles or trapped by the reality of economic immobility, the urban population decides to fight rather than leave. The impetus for holding the line is spurred on in one instance by desire (on the part of the brownstoner) and in the other instance by need (on the part of the poor). In either case the end result is a deep motivation to make the city a better place.

The citizen group is not only looking to improve its own quality of life but to attract others to the city. It is only in making the city a better place that it will be able to attract (or continue to attract) the middle (and upper) economic strata, which is so important to the continuation of a well-rounded urban area.

A Rand Corporation report noted the following: "The pervasive problem (in cities) is not simply a loss of people in general, but the loss of middle class working people in particular, these being the ones who

normally bear the principal tax burden."[16] The middle- (and upper-) income household looks for good physical surroundings, which include the provision of amenities.

Industrial and commercial enterprises have also become highly selective in their siting processes. They want clean air, pleasant settings, and a healthy environment, according to a survey of 2,000 corporate executives made by the New Jersey State Chamber of Commerce and *Business Week*.[17] It is obvious that cities will only be able to survive in the future by providing the ambience that both middle-class homeowners and relocating business corporations desire. Land-use decisions are the key to the creation of that new atmosphere.

The desire for improved land uses spreads to the urban waterfront in many river cities, for there is to be found the last frontier—the place with the only empty land available for reuse.[18] The waterfront is, in many old cities, the only hope for a better future.[19] There on the waterfront is the opportunitity to correct the mistakes of the past. The much-needed urban recreational facilities could be placed there. Office buildings and light industrial and residential areas enclosed in park settings that offer public access to the riveredge could come into being. The service jobs so frequently mentioned by regional planners as an increasingly important source of employment by the year 2000[20] could be placed on the waterfront. All of this will happen, however, only if land uses are planned and made compatible—the required scenario for any new urban waterfront revitalization.

IMPACTS AS STRATEGIES

As mentioned above, the issues involved in waterfront causes are evolved by examining the impacts of the proposed development. In turn, the citizen groups look to impacts as actual strategies in the fight to defeat unwanted land uses. Impacts on air and water, on safety and health, on jobs, etc., are all utilized to involve still more groups and more people in the battle for a better land use. Environmental groups will respond to air and water impacts while civic groups will join the cause because of socioeconomic and safety factors. Still others, such as historical societies and cultural councils, will voice objections over aesthetics. Labor unions, especially in energy facility cases, will generally remain neutral, not voicing an opinion either way (due to the very limited numbers of jobs to acres of land common to energy facilities).[21] Ethnic and minority groups tend to be attracted to the safety/health and job issues as well as to the need for additional recreational space in their cities.[22]

The citizen group leading the protest brings to the attention of each group the issue most important to it; the group features the impact with which it could be most involved.

The impacts have become strategies.

Safety and Health Issues

It must be noted here again that there are different issues for different groups. The lead group in a protest invariably sees land use as *the* major issue[23] for it ultimately involves all the other issues. However, the main concerns of the public at large assuredly may be said to be those of safety and health. They command the greatest amount of attention because almost everyone who lives in a densely populated urban area can be affected by a fire or explosion (incidents not unknown at energy facilities in particular). In fact one of the leading persuaders against several energy facility siting proposals in Hudson County was the massive fires or explosions that occurred in distant places at the time of the public hearings regarding proposed facilities. In one case a Philadelphia oil tank farm experienced massive explosions at the very time that a Hoboken public hearing about a similar proposed facility was going forward. The fire took the lives of six firemen. This type of incident was combined with testimony from a reputable engineer that evacuation plans would have to be readied for areas adjacent to the proposed facility. There was barely one oil tank farm supporter left in town after that.[24]

Environmental Issues

The depth of concerns surrounding air and water pollution is dependent upon the existing conditions in the targeted area. An already heavily polluted city leads the citizenry to take a stand for a decrease, not an increase, in pollution. An already dirty river stimulates the desire to make it cleaner (especially when the federal government is spending millions of dollars to attain cleaner waters).

In addition, recent discussion of pollution as a possible cause of cancer has emphatically coupled health and pollution issues in the minds of the public. Cancer is a scary matter especially when one lives in an area called "Cancer Alley."[25] Any assignment of cancer causes to the possible pollutants to be emitted by a proposed facility is certain to bring forth a degree of sincere emotional response seldom witnessed in other issues.

Socioeconomic Issues

Again socioeconomic issues stem from a perception of what is in existence at the time of confrontation. High unemployment levels along with substantial numbers of families on the welfare rolls offer a good case for job concentrations of a type that local inhabitants will be able to fill. The energy facilities proposed for Hudson County offered approximately one job to 50 acres of land, and that was for a skilled technician. The promise of future employment for hundreds of unskilled workers could not be made.

In addition, the cost to a municipality of a proposed facility needs to be computed. A cost-benefit study, even of the most rudimentary nature, often shows that the expense of improved fire-fighting methods, sewerage treatment, new roads, increased potable water usage, etc., would blot out most projected increases in ratables.

It must be remembered that practically the only attraction that a heavy industrial facility (such as that in the energy industry) has for a municipality is its tax ratables. When this is discounted, even a mayor or councilman cannot continue to be supportive.

Aesthetics

Every waterfront with a river at least 500 to 1,000 feet wide has something called a "view." If the waterfront happens to be in or near a harbor or bay, the view can be quite spectacular. Citizen groups know and appreciate this fact and fight for the preservation of the views and vistas along their waterfronts. They angle to keep the views open not just for their own pleasure but because they realize that this amenity is an important potential money-maker and attraction for the city in its pursuit of good land uses. Only with careful placement and controls will those views remain to attract the restaurant, the museum, the office facility, and the housing complex.

Aesthetics also involve the ability of an individual to re-create himself. The potential for outdoor recreational facilities, especially in the form of public parks, is tremendous. The Tri-State Regional Planning Commission (the federally recognized planning unit for New York, New Jersey and Connecticut) noted as long ago as 1966 that the redevelopment of the tri-state waterfront "should capitalize on the scenic assets of the port" and direct land uses to recreational and residential development.[26] The Hudson Basin Project seconded this by urging the development of waterfronts into recreational facilities.

By 1975 the Tri-State Planning Commission saw an area that was

"shaking off its dingy industrial heritage"[27] and becoming more of a place for people. The citizen groups were encouraged by such statements to take a stand in favor of aesthetics and people-oriented uses.

NEW WAYS

The environmental groups that have fought and won on waterfront issues in Hudson County have done so with a great sense of self-justification. They felt that they were battling the forces in society that were lining up to victimize the poor cities. One of the clarion calls in each of the five energy siting battles in the county from 1970 to 1975 was that Hudson County was not going to be the "dumping ground" for society's environmental facilities.

Such a call to arms had wide, basic appeal, especially in an area where many people hold a long-term grudge against "the system." In fact, it is neither unusual nor untraditional to find that a great number of the disgruntled, disaffected, or newly aspiring in U.S. society are to be found in the cities. Urban areas, especially in the Northeast, have been the landing points for immigrants. The "huddled masses" still cling to many an urban core waiting for the chance to climb onto the first rung of the societal ladder.

Many, unfortunately, never even make the step up. They find themselves living in substandard housing and unable to see financially beyond tomorrow morning. Such an existence is infuriating.

This factor of anger and dissatisfaction is a fundamental one in urban life and in urban issues. It must be dealt with, not as an aberration or an unkind value judgment, but as a reality. It is only by understanding this sense of frustration and dissatisfaction in a large segment of the urban population that new and just ways may be formulated to deal with urban (waterfront) matters.

NEW DECISION MAKING

There must be new ways evolved for making urban waterfront decisions if the waterfronts are ever to become viable places. The crystallization of pro and con positions and the dedication to "a victory" at any cost by developer, citizen group, or governmental entity must be avoided, especially at the beginning of the facility review process. Entrenched positions and firm stands taken at the outset must be avoided (though with the understanding that opposition may still evolve after the facts are reviewed, especially in energy facility siting cases).

The new decision making must, therefore, involve the citizenry up

front at the very beginning of land-use planning itself. Since urban waterfronts are just now surfacing as interesting and challenging places, the timing is right to incorporate citizen participation in special district reviews in most cities. Since many of the regional urban waterfronts are empty and decaying, now is the moment to institute planning and implementation mechanisms that will incorporate citizens as integral, and most especially, respected members of the process.

Over the years environmentalists have achieved a hard-won place in many urban decision-making situations. Perhaps because it was so hard-won a position, the citizen groups may tend to be hostile, suspicious, and ready to fight. They frequently come to a governmental agency with the intent to win a war, not to gain a better decision.

Such a state of affairs has occurred because of the attitude of government toward the citizen element when it tries to attain a role for itself in decision making. Governmental attitudes have created adversary situations rather than cooperative ventures. Though it may be said that the citizens should control themselves more and show less vehemence in certain instances, it must be remembered that government is in the position of power, that it is the representation of the establishment. It needs to take the first step toward a better decision making atmosphere.

Local Government Attitudes

The entire problem of governmental attitudes frequently starts at the local level. In many urban areas government displays the vestiges of a still-powerful political machine structure. Through the 1960's and even into the 1970's, such local governments operated as did their turn-of-the-century forebears–by keeping to themselves and their cronies the absolute right to make all decisions. It is a hard task to give up control of absolute power; yet this is what must be done on the local level if urban areas are to be revitalized and saved. The *people,* the citizen, must be permitted to have a more critical role in decision making.

As mentioned before, practically the only visible successes in many urban areas today are those that have occurred in housing. These successes came about from community approval at minimum to direct, day-by-day involvement in neighborhood conservation at the maximum. In either event, the citizens had a voice. This same type of involvement (even expanded) needs to be developed for land-use decisions on local urban waterfronts.

It may be difficult to attain this, however. The local political system can fight long and hard. Sometimes the citizens can fight harder. In Hoboken from 1970 to 1971 the first energy facility siting battle in

Hudson County, New Jersey, occurred. The handful of people who opposed the facility were barraged with citizen advice: "Don't bother; you can't fight city hall." The handful of people did bother and the fact that they did beat city hall came as a distinct surprise to almost everyone.

Today the political structure in Hoboken is more open (it was treated to a second defeat in 1975 on the oil-tank-farm issue), but it is still leery of citizen involvement. It has been the citizens themselves who have had to forge the line of communication from which all else flows. The time has come, however, when local government itself must take a step toward the citizens and allow them into the land-use decision process. To suggest that this be done with respect for that citizenry may be too much to ask at the local level, but without that respect there will always be the risk of irreversible polarization and a battle to the death, something that should be avoided at all costs.

Regional Government Attitudes

In many states the region is described according to county lines (as in New Jersey). It is also the case that in many states the county or regional structure (if it exists) is only advisory in nature. Without the power to make decisions, advisory groups tend to shy away from making any statements at all about pending proposals; they sit on the fence until some other political division makes a decision that seems safe for them to accept.

The officially recognized federal regional planning structures, such as the Tri-State Regional Planning Commission in the New York, New Jersey, and Connecticut area, also opt for nonjudgmental stances on what is almost always called "a local siting decision." The regional planning agency does, however, make sweeping judgments on a large scale. Whole segments of a region—such as Hudson County—may be assigned a "primary urban economic cluster" label,[28] which means that anything goes in the name of economic development. Such designations are misleading to developers who are looking for indications of acceptability for their projects. It comes as quite an expensive jolt when the regional planning commission's green light is met by a local citizen barricade. Even regional planning entities with basically advisory functions should be encouraged to be more sensitive to city or even county efforts for a better quality of life. They can only do this by involving both local government planners and the citizenry prior to assigning regional land-use designations.

State Government Attitudes

Some of the most direct governmental involvement in waterfront issues is now possible from the state level due to the U.S. Coastal Zone Management Act of 1974. The statewide coastal zone planning that is required (if a coastal state opts to participate) demands strategies for "shore" areas as well as urban waterfronts. Such a demand would appear theoretically to create the opportunity for a well-balanced view of possible usages for an entire state coastline. Unfortunately, in one case at least (New Jersey), it has created a dichotomous situation.

The shore is being protected for its natural resource attributes and its tourism dollar potential. The urban coastline offers a different prospect for state planners. There the waterfronts are trussed with bulkheads and splayed with piers. It is extraordinary, then, that urban waterfronts are considered to be the perfect places for economic development.

New Jersey has passed legislation that protects the shore.[29] (The shore, of course, is the oceanfront, not the urban waterfront.) Once the decision has been made to so distinguish the shore from the "built environment," the latter areas become not only the logical but the primary places in which to site economic development projects.

Though the desire to save the shore is laudable (and one supported by urban environmentalists), it does make the nonshore coastline the target for placement of facilities considered to be unsuitable elsewhere. "It has to go somewhere" has become a frightening expression for city dwellers because the "somewhere" tends to be the city.

In addition, a state can seek to eschew the making of overt decisions about urban waterfronts by reverting to the need for an "in-place institutional structure" as the primary element in making judgments about waterfront siting. State coastal zone planners can therefore ignore the cause of the recently revitalized urban area so full of hope and plans by stating that the political climate will not support special handling for urban waterfronts—present legislation must suffice.

Such positions, which refuse to support and recognize the vitality of emerging urban areas in coastal zone planning, are matched by other segments of state government that today are making actual decisions about usage. In New Jersey the Department of Environmental Protection (DEP) reviews applications for riparian and wetlands usage. During a particularly vigorous battle for placement of a 254-tank petrochemical facility in Jersey City just 1 mile south of the Statue of Liberty, the DEP decided—prior to final completion of the developer's plans and prior to input by the public—that the facility should be granted permits. Here again, citizen group protest countered that premature decision. The

protest became a pitched battle charged with wild accusations and citizen emotion.

The basic mistake the government made was to ignore the citizens from the beginning of the review process. (The local political structure also welcomed the facility.) It was a costly oversight, but as long as state government persists in thinking of urban waterfront areas only as places where traditional usage should continue and where citizen input can be ignored, state decisions will be fought.

Federal Government Attitudes

The federal government can afford to be magnanimous; it is far enough removed from actual site-specific decision making and so diverse in its departmental structure that it may remain as a source of something-for-everybody.

For example, the U.S. Fish and Wildlife Service may take a negative stand about a proposed energy facility while the U.S. Environmental Protection Agency may support the same facility from an air quality standpoint (due to a policy called "Emission Offset"[30]). On the other hand, the same U.S. Environmental Protection Agency may oppose the same facility due to water pollution potential while the Corps of Engineers may look favorably upon it.

In addition, the various federal agencies and departments, until recently, have tended to be sparing with information for citizen groups and ultracautious in their dealings with them. Now, with the new insistence upon citizen participation,[31] the federal agencies may lead the procession to new ways in decision making.

New Mechanisms

Urban waterfront decisions are both site-specific and yet far-reaching in nature. Herein lies the problem of review and decision making. There must be enough awareness of regional concerns and sufficient input from local sources (both governmental and citizen) to justify the decisions and to make them acceptable.

Since local government operates in such a personalized ambience (in which each citizen movement will have to make its own mark), the next step up the hierarchical chain of government, the regional level, may be the logical place in which to make urban waterfront decisions. (This level would also be proper because waterfronts are essentially regional, not local, in scope.)

Unfortunately, in many states, such as New Jersey, the closest thing to

regional government is found at the county level, where no existing decision-making mechanism is in place. Hopefully, in the future such a structure will be created.[32]

The regional approach would appear to be a valid method for obtaining local input while achieving regionally sensitive decisions. Some success has already been achieved by the San Francisco Bay Conservation and Development Commission. Not only are citizens and politicians involved, but issues of concern have a continuous platform for exposure and public reaction. Such permanent forums are essential to the urban waterfront decision-making process.

Another essential ingredient for success on waterfronts is the establishment of appropriate funding mechanisms—again an area in which citizens should be involved. As was mentioned before, the housing programs available to cities have brought forth some visible successes because of involved citizen input. Why not borrow some of the economic stimulus methods of housing and translate them to waterfront rehabilitation?

The Department of Housing and Urban Development (HUD) probably offers more programs for urban rehabilitation than any other agency. Through its coinsurance money, low-rate mortgage guarantees, subsidized rental programs, and Community Development Block Grant funding to cities, it stimulates urban rehabilitation. It also insists upon citizen involvement at every step.

The Neighborhood Reinvestment Corporation, which is sponsored by the Federal Home Loan Bank, focuses on a tripartite methodology of involving the citizens, the municipality, and the local lending institutions in revitalizing whole blocks of a city. It works.[33]

The key to these housing programs is a multilevel approach to rehabilitation that involves developers, local and state governments (much of HUD funding is administered at the state level), lending institutions—and the people.

Another virtue of the urban housing programs is that one federal agency—HUD—coordinates it all. Urban waterfronts need the same treatment. There needs to be established at the federal level a coordinating arm with a hand that disperses funding assistance to urban waterfronts. (HUD might be empowered to do it with the technical advice of the federal Coastal Zone Management Office and the Environmental Protection Agency.) Why could there not be a coinsurance program for waterfront projects with specific environmental, health, and economic criteria built in? Why could there not be low-interest-rate construction mortgages for waterfront parcel developers who guarantee a free public park as part of their projects? Why should there not be federal tax credits

for urban waterfront commercial and residential projects that adhere to certain aesthetic and environmental guidelines? (Low- and moderate-income urban housing now has such benefits that may be "syndicated" by the developer for an even greater profit.[34])

If the federal government is truly interested in saving the cities, it should explore funding possibilities for urban waterfronts. Inasmuch as there are 30 coastal states with 70 percent of the U.S. population living in them (54 percent of U.S. population lives within 50 miles of a coastline), there are a multitude of people who could be served by such approaches.

NEW ATTITUDES

The citizen groups in urban waterfront communities are basically intent upon changing attitudes about the cities themselves. They are worried because there is in most approaches to urban areas something of a contradiction in attitudes.

First, there is an emphasis on revitalizing cities by bringing back the middle class. Second, there is the unarticulated and perhaps even subliminal intent to put society's unwanted facilities in areas which, to many minds, are already ruined. These two thrusts are diametrically opposed to one another. The middle class returns to the city for convenience, less costly travel, and attractive housing and environment. "Brownstoning" contains all of these factors. Without the physical betterment of the general environment, the time, effort, and money spent on "brownstoning" and "rehabing" will be for naught. There must be a clear policy as to what is meant by urban rebirth. It cannot be homes and heavy industry battling it out.

To the urban citizen groups, cities are unique places that require unique approaches. If the cities are to be saved they must be conserved for people and not be revamped in the image of a politician or a developer. A recent report by the Conservation Foundation noted: "[S]urely the future of our cities depends ultimately on their desirability to people with choice as places to live and work as well as their hospitality to people who are there because of limited choice."[35]

New Attitudes Toward Land Use

Cities are places where notoriously poor land-use decisions have been made in the past. From the 1870's onward, when many U.S. cities were developing, progress was the key word and progress meant industry—any kind of industry. Cities vied to get the steel mills, the foundry, the

slaughterhouse, which they then placed in the very midst of residential areas so that the employees could walk to work in a time when mass transportation was almost nonexistent. No one knew in those days that the symbol of prosperity—the coal-black smoke billowing from the factory chimney—was actually affecting the health of the community.

Today heavy industry is more frequently seen as a poor neighbor in densely populated cities. Unfortunately, there are still those who would opt for ratables in lieu of clean air and a better quality of life. Today it is the citizenry that must stand united for that better life through better land use. People in many cities are doing just that.

New Attitudes of Government Toward Citizens

The actual step-by-step technique of governmental dealings with citizens is not as important as the governmental attitude toward the citizens themselves. Hostility to the views of the citizenry becomes immediately apparent. Any attempts to play a clever game of nodding acceptance in an effort to assuage the emotion of the moment is also a dangerous move. Citizens are astute at understanding when they are being co-opted. Honesty on the part of government is always a best policy.

Government employees and officials should be retrained to respect the views of citizens. Opinions should be listened to, whether they are factually based or emotionally driven. The articulation of opinion is one that displays values, and the values of people should form the basis of governmental action. It is only by hearing and heeding the expression of values that adjustments can be made to plans, so that those who will be harmed by a proposed facility can be in some way compensated, that the process of consensus and accommodation can be started. By sensitively interpreting the value structure extreme positions can be avoided. Government must be mature enough to do all of this.

Government must also be openhanded with its information. It should willingly and freely give the results of its research and assessments. Only in this way can citizens reach educated decisions.

Government should also require exploration of alternatives for proposals and share these with citizens. The danger in not having alternative suggestions is that an either/or situation arises that can lead very readily to the win/lose position—something that must be avoided, especially in the beginning of a review process.

Until government welcomes the view of citizens—not as a panacea or the last word, but as valid, respected input—the relations between the groups and government will be adversary in nature.

New Attitudes of Citizens Toward Government

Many citizen groups have only been involved in battles and fights *against* something. A recent confrontation in Hudson County centered around the future land use in a proposed 800-acre tract called Liberty Park. The citizens rallied against what they deemed to be the plot of the state government to hand over the acreage for use as a theme park. They did not initially rally *for* open space but *against* the theme park.

This attitude of being *against,* essentially inciting the populace by appealing to its sense of deprivation and inferiority, is certainly a facile way to bring hundreds of people out to public hearings. It is, however, a tactic that belongs only to those who must win the battle at any cost (the result of the either/or posture). It is also the approach of groups that are desperate for a foothold in the power structure. Groups such as the latter invite the disdain and disrespect of government.

If there is to be urban revitalization there must also be an effort at understanding on the part of the citizenry. The citizens, then, must:

- Be involved from the beginning of the planning process and become aware of the problems of redevelopment.
- Be willing to become actively involved in seeking new uses for waterfronts.

The time of maturity for urban citizen groups is at hand. The more successful groups already recognize this fact and are willing to work with, not against, development, for redevelopment also provides a place for conservation, preservation, and restoration. "Environmentalists should increasingly become creators themselves, deciding what kind of development they would like to see and allying themselves with those who, for their own profit, will provide that development."[36]

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29. New Jersey has in effect the Coastal Area Facility Review Act which is exclusively aimed at the "shore" area of the state.

30. This policy allows air pollution to be computed on a regional basis. The swap of a new facility in the region for an old pollution-producing installation is viewed as a reduction in pollution and thus an improvement in air quality. The policy has been seen by many groups as a slight-of-hand attempt to keep the energy industry happy.

31. The U.S. E.P.A. is funding an experimental Toxic Substances Task Force effort in seven New Jersey counties in order to encourage citizen participation. Other groups such as the U.S. Corps of Engineers have distributed "Guidelines and Checklist for Planning and Implementing Citizen Involvement Programs."

32. New Jersey Governor Brendan T. Byrne recently signed an order to create a Hudson River Study and Planning Commission—a first step toward a regional waterfront structure.

33. Phyllis Myers and Gordon Binder, Neighborhood Conservation, The Conservation Foundation (Washington, D.C., 1978), Chap. 3.

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Appendix: Urban Waterfront Lands Symposium Participants

March 28–29, 1979
Cambridge, Massachusetts

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