COMPREHENSIVE HARBOR & WATERFRONT PLAN

FOR THE CITY OF EASTPORT

Prepared by the
Eastport Project Oversight Committee
September 1991

Assisted by:

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EXECUTIVE SUMMARY

The purpose of the Eastport Comprehensive Harbor and Waterfront Plan is to devise a long-term strategy for guiding future use of Eastport's waterfront. The project focuses on the downtown area between Todd Head and Buckman Head, and the areas of Deep Cove and Broad Cove. The project has been led by an 11-member Project Oversight Committee, which sought to:

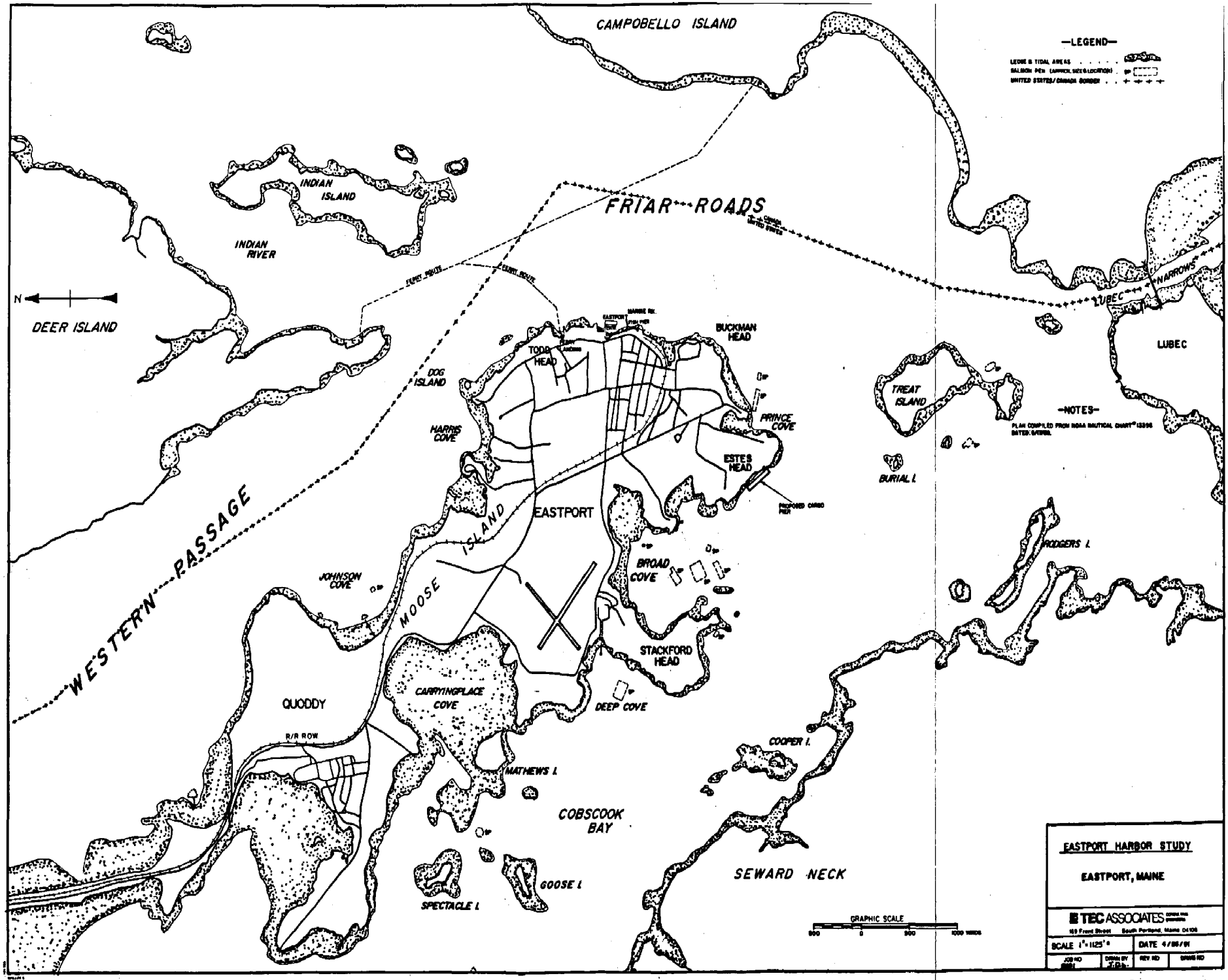
- quantify use of the shoreline by all commercial and recreational interests;
- resolve congestion at the Breakwater;
- identify potential pier, ramp and Breakwater improvements;
- seek alternative areas for berthing and mooring;
- identify issues and opportunities associated with the Port Authority's proposed expansion and relocation project;
- improve the way the community is planning for growth in the aquaculture industry and with associated facilities, such as the Washington County Technical College's Marine Trades Center;
- improve harbor management; and
- create an understanding of environmental regulation and the importance of water quality.

There is no one "magical" solution to Eastport's issues. City officials must integrate a variety of actions in order to resolve its existing conflicts and prepare the community for waterfront use over the next decade. This report focuses not on "quick fixes"; it seeks to take a long-term view of Eastport's options and opportunities.

KEY FINDINGS

- *Eastport's waterfront is changing.* Various areas will soon be used differently than before, and more people and boats are destined for the city's shores. Among the factors causing change are the Port Authority's relocation and expansion project, the creation of a State park at Shackford Head, the city's water-quality effort of eliminating combined sewer overflows, a Canadian tax structure that encourages shoppers to purchase goods in U.S. border communities, and steady growth in aquaculture and recreational boating.

- *The Breakwater area is used to capacity, and growth must be directed to alternative locations.* Breakwater users include: The Eastport Port Authority and Federal Marine stevedoring operations, cargo ship and barge docking, tug dockage, general boat dockage, Coast Guard dockage, Border Patrol dockage, public landing, boat ramp and hot-dog stand. Commercial and recreational activity inside the basin and on the Breakwater make it difficult for traditional fishing boats such as groundfish or scallop draggers to get access to hoists or efficiently unload their catch. Berthing space is at a premium. This has led to dockage techniques such as double and triple rafting (some


CAMPOBELLO ISLAND
—LEGEND—
LEDGE & TIDAL AREAS
SALMON PEN (ARROW SIDE/LOCATION)
UNITED STATES/CANADA BORDER
INDIAN ISLAND
INDIAN RIVER
FRIAR ROADS
FERRY ROUTE
N
DEER ISLAND
NARROWS
LUBEC
BUCKMAN HEAD
TODD HEAD
DOG ISLAND
HARRIS COVE
PRINCE COVE
ESTES HEAD
TREAT ISLAND
BURIAL I.
—NOTES—
EASTPORT
ISLAND
BROAD COVE
RODGERS I.
JOHNSON COVE
MOOSE
WESTERN PASSAGE
STACKFORD HEAD
CARRYINGPLACE COVE
DEEP COVE
QUODDY
R/R ROW
COOPER I.
MATHEWS I.
COBSCOOK BAY
SEWARD NECK
SPECTACLE I.
GOOSE I.
GRAPHIC SCALE
EASTPORT HARBOR STUDY
EASTPORT, MAINE
TEC ASSOCIATES
SCALE 1" = 1125'-0"
DATE 4/86/91

boats are rafted as many as six abreast), causing time inefficiencies in maneuvering a vessel to either enter or leave a dockage area.

- *The Port Authority has far outgrown its existing facilities.* Approximately 60 trucks of logs per ship per day overwhelm downtown and the adjacent residential neighborhoods over a 15-day ship call. The number of trucks can range to 120 over the course of a 12-hour shift. Nearly every available lot in the city is used for log storage. Facility limits are the biggest obstacle to developing new business and keeping existing business.

- *Aquaculture is expected to continue its growth in the 1990's, with mid-decade predictions of 26 million pounds worth at least $78 million annually.* Employment is expected to grow from approximately 200 to at least 325. Approximately one third of the 54 boats renting space in the City-controlled Breakwater Inner Basin are associated with the aquaculture industry. As aquaculture matures, it will present a number of entrepreneurial opportunities in support services: diving, net repair, transportation, diesel- and outboard-motor service, boat and barge construction, cage construction, processing, packaging, and ice-making and supply. In addition, there will continue to be various part-time positions available to workers in the traditional fishery to complement their existing operations. In terms of waterfront infrastructure, there is a need for ramp space designed specifically for use by aquaculture barges. The Marine Trades Center property and programs are valuable resources for the industry.

- *Recreational boating is on a gradual growth pattern that is adding to inner-basin congestion and creating new opportunities for serving the market.* Transient-vessel trips have increased nearly 6 percent annually during the last 1980's, with boat visits by craft 30' and over increasing approximately at twice that rate (12%). Local use of boats is expected to increase 1% to 4%, with 5%-10% increases in a strong economy.

- *Tourism accounts for between 15% and 20% of Eastport's economy.* Taxable sales from restaurant and lodging increased at an annual rate of approximately 17% in the late 1980's. This will create more opportunity for tour and charter boats and more demand for dockage and access.

- *Waterfront use is starting to outgrow the existing method of harbor management.* In particular, the City is not keeping up with fee collections, generating approximately half the money of what potentially may be available.

- *Maintenance of good water quality is a key factor in the success of aquaculture, boating and tourism development.* The current sewer line improvement project is a major water quality effort.

- *It is important for all parties to understand the coastal environmental permitting process* because of the scope and variety of proposed public- and private-sector development projects.

PROPOSED SOLUTIONS

- *Increased harbor management and oversight of waterfront use will be needed as use increases.* To address these issues, city officials should strengthen the harbor-master position by clarifying the job description, establishing performance evaluation criteria and adding a part-time assistant to assist with fee collection and other duties during peak periods. There is also a need to modify the harbor ordinance to reflect the requirements of State Title 38 M.R.S.A. and the U.S. Army Corps of Engineers. In the long term the City should consider forming a harbor committee to work with the harbor master or allow the Port Authority to expand its management jurisdiction. Coastal planning grant money from the State Office of Comprehensive Planning is available to help with the harbor-management improvements.

- *Existing efforts to relocate the Port Authority cargo facility out of downtown to Estes Head should continue.* The Maine Department of Transportation (MDOT) has a bond program for financing the relocation/expansion. After the move (scheduled for the mid-to-late 90's) the existing cargo operation at the Breakwater may be used as a second cargo berth or a cruise-ship berth. Cruise ships are the fastest growing segment of the travel industry. More marketing of the cruise-ship industry is needed by the Port Authority to build upon Eastport's solid growth in tourism. Port Authority land adjacent to the Breakwater will need to fulfill more Breakwater parking needs in the future. Otherwise, City officials must seek opportunities to acquire land for parking.

- *Existing efforts to improve the Fish Pier should continue.* Proposed projects have included installing cathodic protections and a berthing float system. The cathodic protection will protect the facility from corrosion. The float system will make the facility more usable for commercial boats and help eliminate congestion at the Breakwater attributable to loading/unloading. MDOT is planning a bond issue program to pay for these improvements.

- *Efforts to direct recreational boating to the north end of the Breakwater should continue.* However, expansion of the existing berthing system should not occur except in conjunction with a proposed extension of the Breakwater. The extension will help create a second Breakwater basin and protect the north-end floats more than they are protected now. The Breakwater improvement is included in MDOT's proposed bond issue.

- *Future recreational boating growth should be directed to the former Cannery Restaurant area adjacent to Todd Head.* The area is the most protected on the downtown shore for small boats. To ensure that the property remains available for such use, the City may want to acquire the site, or at least ensure zoning support for recreational boating development by private developers.

- *In the long term, if recreational boating growth continues and demand for facilities increases, a small-boat basin could be created along the inner section of Broad Cove.* As proposed, a mooring area would be located off the city and state properties on Shackford Head. This option for addressing recreational boating will require a partnership of state and

city interests regarding access and work with the aquaculture industry regarding strict attention to water-quality issues associated with recreational boating.

- *Aquaculture use of the Breakwater Inner Basin will continue, at least in the immediate future, but the industry should be encouraged to increase its use of Deep Cove and the Marine Trades Center facilities.* Deep Cove will support only a limited number of moorings because of the existence of salmon pens and a cable crossing. However, it is possible to create a boat ramp specifically designed for aquaculture use. (This would require purchasing property.) In addition, the existing dock can be renovated to add up to 20 berths. Because of the Marine Trades Center's plans to develop an aquaculture research center and the existence of a dock facility, the Deep Cove area represents a future stronghold for aquaculture infrastructure.

- *The City of Eastport should continue its efforts to improve water quality* by investigating grant programs through the Maine Office of Comprehensive Planning and the State Planning Office, which fund vessel pump-out facilities and shore stewardship programs.

INTRODUCTION

The purpose of the 1991 Comprehensive Harbor and Waterfront Plan is to guide how Eastport's waterfront will be used in the future. Focusing on the downtown areas between Todd Head and Buckman Head, and the areas of Deep Cove and Broad Cove, the plan addresses how to relieve congestion at the Breakwater and where to direct future growth in commercial and recreational boating. These assessments involve the development of strategies for the development of alternative berthing and mooring locations and recommendations on specific locations for commercial and recreational use. Because of the growth in use of Eastport's waterfront and the need for either new or improved facilities, recommendations have also been made to strengthen harbor management. Also, the project includes an inventory and analysis of waterfront use, analysis of the marine industries and an overview of environmental issues.

This project is one of several efforts underway that will affect Eastport's future. The Port Authority is planning a $20 million relocation and expansion, City staff and the City Council are finishing an evaluation of waterfront zoning and the community is preparing for a city-wide update of its comprehensive plan. The Comprehensive Harbor and Waterfront Plan is being coordinated with each of the efforts to ensure policy consistency.

All of these efforts are timely because the waterfront is in the midst of growth and change signalling yet another chapter in the area's rich history. As is usually the case, pinpointing the exact times that change began is difficult, but broad public and private activities over the last 12 years have shaped the waterfront as it is known today. In 1979 Eastport underwent a $1.15 million waterfront redevelopment program. The downtown shoreline was stabilized against erosion, a park and fish pier were constructed and many downtown buildings were revitalized. In 1977 a Port Authority was chartered. Eastport became the state's second largest general cargo port in 1988.

In the 1980s some $20 million was invested by the private sector in aquaculture. Expansion of the industry is underway, including processing and new species' development. The Marine Trades Center of the Washington County Technical College developed award-winning boat-building and marine-painting programs, then expanded into fisheries and aquaculture training. A disease diagnostic-support facility will soon be housed at the Marine Trades Center and a proposed aquaculture research center is now part of the Center's Master Plan.

Downtown boat dockage has expanded because of increased activity in aquaculture and recreational boating, and Canadian visitation by water. The statewide real estate boom of the 1980s also affected Eastport. Two coastal subdivisions resulted in concern about incremental loss of open space. As part of a statewide effort to protect land from development, the Land for Maine's Future Board purchased 92-acre Shackford Head and its 1.5-mile shorefront for $560,000. The State Department of Conservation is now developing a visitors' center on the site.

At the current time, waterfront facility projects are being planned on both the local and state government levels. Private companies and landowners are expanding operations or seeking to develop property. The probability is high that the Canadian tax structure will result in even more New Brunswick residents travelling to Eastport by boat to shop. An in-depth inventory showing the number of activities affecting Eastport's Waterfront is listed in Appendix A.

The changes have not come without problems. Berthing space and staging areas are cramped as shippers, traditional fishermen, aquaculturists, recreational boaters and transient boaters compete for limited dock space. Inadequate warehouse space has resulted in cargo being diverted to other ports. Management oversight of the waterfront needs to be expanded.

Ten years ago a publication described Eastport as "a place of hangers on." If that were so, the grip of the community has been strong. The problem now faced by Eastport is how to build upon its waterfront successes.

City officials and the planning committee associated with this project believe that without a comprehensive plan to address issues raised by the activities, the economic and social gains of Eastport during the last decade may be threatened.

SECTION I

ASSESSMENT OF WATERFRONT USES

INTRODUCTION

The City of Eastport Project Oversight Committee felt strongly that coastal public policy development was dependent upon detailed information about how Eastport's waterfront operates.

This section of the report is organized as follows:

- an inventory and analysis of the shipping industry;
- an inventory and analysis of the fishing industry, including aquaculture and traditional fisheries;
- an inventory and analysis of the tourism and recreational industries, including
  - recreational boating;
  - water transportation; and
  - the hospitality industry.

SHIPPING

INTRODUCTION

Shipping is the most prominent activity on Eastport's waterfront. This commerce is managed by the Eastport Port Authority. The Port Authority is a state-created, quasi-municipal corporation with authority to construct, operate, maintain, repair and replace piers, terminals and warehouse facilities on the land and in the waters within the limits of the City of Eastport.

Port Authority policy is established by a seven-member board of directors, including four publicly elected positions and three appointed seats (City Council chairman, the city manager and a representative from the Eastport Chamber of Commerce). A port director manages day-to-day affairs with assistance from a projects coordinator.

The Port Authority leases most of the Breakwater from the City of Eastport at no charge (the City retains management of the Inner Basin and North Face). The Port Authority also leases adjacent buildings and land formerly belonging to Holmes Packing Corp.

The port's stevedoring services are provided by Federal Marine Terminals, Inc., a subsidiary of FEDNAV, Ltd., of Montreal, Canada. Federal Marine is a shipping agent for Star Shipping, Inc., Forest Lines, Inc., Maritime Canada and FEDNAV, Ltd. Federal Marine also provides stevedoring services for Maritime Canada Shipping Services. The companies serve Eastport on a regular basis, linking Eastport with ports in Japan, Korea, Taiwan, Canada, Great Britain, Scandinavia, Northern Europe and the Mediterranean.

Port labor is provided by the Northeast Longshoremen's Association. Tug and construction services are provided by Passamaquoddy Towing Services, Inc. Pilot services are provided by the Quoddy Pilots Association.

ECONOMIC IMPACT

Eastport's port business has been focusing on two commodities. In 1990 woodpulp destined for England and Scotland represented 72 percent of the Port's volume. Logs shipped to Turkey and Japan represented 28 percent. Georgia Pacific of Woodland is the primary user of the port, accounting for 85 percent of the 1990 volume. Revelen, a Long Beach, CA firm working with Maine wood product companies, James River of Old Town and Trade Point International of York account for the rest of the volume.

Cargo activity on the existing Breakwater dates to 1968. In 1981 the Port Authority took a more formal approach to shipping strategy. Federal Marine opened in Eastport the same year. By 1985 the port had a part-time port director, a position that has grown to a full-time job. The port has experienced steady cargo growth with a very small physical facility. In the first year of operation, the port handled six ships and 15,000 tons of cargo. By 1990 the volume had grown to 168,813 tons and 40 ship calls. Table II lists cargo volume since 1968 and ship calls since 1981. The Port Authority generates approximately $0.90 per ton in revenue,

or about $150,000 in 1990. This money is spent on maintenance, marketing, capital improvements, administration and site assessment and planning associated with the proposed new Estes Head location. The port is active in the City of Eastport's sister-city relationship with the Japan community of Oigawa-cho in the Prefecture of Shizuoka.

Direct employment associated with shipping includes stevedores, agents, pilots, towing firms, trucking firms and governmental support such as the Port Authority, U.S. Customs Service and the Coast Guard. According to the port planning firm of Booz Allen & Hamilton, one thousand tons of cargo at Eastport represents 0.20 jobs. With a volume of 168,813 tons, port activity provided 34 jobs in the various employment sectors in 1990. The average income per job was approximately $26,000. This represents an annual payroll of nearly $1 million.

Future Plans

In 1990 the Port Authority, in association with Booz Allen & Hamilton, conducted a market feasibility study, funded by the Maine Department of Transportation. The study concluded that:

- The Port of Eastport has far outgrown its existing facilities.
- Market demand at a new facility is estimated at 300,000 tons (500,000 by the year 2000).
- New facilities would cost approximately $20 million.
- Over the 20-year life of the project, direct economic benefits from new port construction would equal $42 million, or a benefit/cost ratio of 2.0. The economic benefits include:
  - direct port authority revenue from dockage, wharfage and terminal rental ($6.5 million);
  - transportation cost savings to be realized by Maine shippers who use Eastport ($5.9 million);
  - direct employment resulting from port activity ($22.4 million); and
  - additional direct employment to be created in the construction of the new port facility ($6.7 million).

In addition to the 1990 Booz Allen & Hamilton report, three studies in the 1980's addressed locational issues for the port:

- "Preliminary Evaluation of Alternative Port Sites," 1982 by Olko Engineering;
- "Proposal for Deepwater Port Facilities," 1983 by DeLong Corp.; and
- "Cargo Facility Economic and Technical Feasibility Study," 1983 by C. E. Maguire, Inc.

Three sites have been addressed: the existing Breakwater location, Kendall Head and Estes Head. Estes Head is the preferred site. The Port Authority has completed a wetlands assessment of the area and considering plans to construct two 6,000-square-foot warehouses. The estimated time frame for breaking ground on a new port facility is 1995.

Below is a summary of assessments of the various sites:

- *Breakwater.* Cargo activity overwhelms the facility and truck traffic, creating a downtown and neighborhood public-safety issue. As many as 60 truck loads of logs per day pass through residential neighborhoods and the central business district over a 15-day ship call. (Truck traffic can range as high as 120/day over a 12-hour shift.) Port facilities include the 440-foot x 90-foot breakwater (nearby dolphins allow for berthing of ships of 700 feet in length) and 20,000 square feet of warehouse and related areas. There is a 40-foot depth at the Breakwater berth at mean low water. According to industry standards cited by Booz, Allen & Hamilton, Eastport's volume exceeds its capacity by more than 8 times. While this problem is resolved in part by the storage and staging of cargo 38 miles away at the Georgia Pacific Mill and at other storage sites around Eastport, the port continues to lack storage space in close proximity to the dock. Logs are stored, as one report has noted, "literally all over town." The 1990 market study conducted for the port identifies facility limits as the biggest obstacle to developing new business and keeping existing business.

- *Kendall Head.* Oceanographic studies indicate that downtime at the facility due to adverse wave conditions would be about 20 percent. This would reduce the port's competitiveness. Development solutions can minimize downtime, but the cost is considered excessive.

- *Estes Head.* The area meets the criteria for a forest products' terminal: 60 feet of depth at mean low water (35 is all that is needed), expansion capability, storage capability and transportation access. Specifically, the location offers the following advantages:

  1) The 43-acre site is owned by the Port Authority. There is no need to purchase land.
  2) The area is currently zoned for industrial use and is used for log storage and debarking activities.
  3) Truck traffic would use the outskirts of the city instead of affecting downtown.
  4) The size of the property means additional room for storage, adjacent to pier operations.
  5) The size, combined with 900 feet of water frontage, leaves room for future expansion without the need to relocate port facilities.
  6) Currents and tides do not hinder the docking of ships or loading/unloading activities.

ISSUES AFFECTING INDUSTRY'S FUTURE

Over the next several years the Port Authority must address several issues. There is a need to continue to maximize use of the Breakwater without losing business because of congestion and to plan for Estes Head in a methodical, comprehensive manner that satisfies federal, state and local environmental permitting criteria.

Breakwater Issues.

- *Continued marketing.* It is necessary to continue to serve existing customer needs and ensure customers that predictable plans are in place to resolve space and logistical problems. Efforts must also continue to diversify the customer base of the port. In addition, the passage of a Goods and Services Tax in Canada has created the potential for increased warehousing opportunities in Eastport. The Port Authority has an active marketing program that should continue.

- *Use issues at the Breakwater.* In the next five years at a minimum, the Breakwater will continue to serve a variety of users. While efforts are underway to resolve congestion, there will continue to be space shortages at various times. Policies need to be developed to minimize problems, including:
  - location of barge moorings away from the Breakwater during the summer, peak-boating season;
  - parking policies that allow commercial users necessary access to their vessels without creating public-safety or congestion issues associated with shipping activity; and
  - increased harbor management to address issues of congestion and fee collection.

- *Future use of the Holmes Plant area.* In association with its growth plans and the need to relieve congestion at the Breakwater, the Port Authority has received a grant from the National Trust for Historic Preservation to study the feasibility of marine reuse of the Holmes Plant. The site had been discussed as a possible location for barge dockage, fishing vessel dockage and hoist location and even a terminal for small passenger vessels. However, the property has been declared structurally deficient by a recent survey. The Port Authority is now looking at options, including the feasibility of reuse or the need for demolition.

Expansion Issues.

- *Environmental analysis of Estes Head.* The wetlands assessment is completed. There is also a need for a comprehensive environmental impact assessment of a variety of sites to ensure federal officials of the appropriateness of Estes Head.

- *Impact of new port.* Some concern has been expressed about the impact of the proposed new port on water quality in Cobscook Bay, a prime location for the aquaculture industry.

- *Financing of the expansion.* Current plans call for the Maine Department of Transportation (MDOT) to finance the project through state bonds. MDOT's Transportation Investment Program for the 1992-1993 biennium includes a $200,000 bond issue proposal to begin the funding process.

- *Use of the Breakwater after the expansion.* Several issues are being discussed, including:
  - the continued use of the berth by cargo ships (as a backup facility);
  - use of the berth by cruise ships;
  - whether or not Federal Marine Terminals, Inc. will continue leasing warehouse space;
  - future use of the property to assist with increased parking capacity.

TABLE I.1
Port of Eastport Historical Shipping Volume

Year	Volume (in short tons)	Ship Calls
1968	63,641	
1970	18,157	
1972	20,067	
1974	18,605	
1976	16,385	
1980	18,361	
1981	15,197	6
1982	52,225	12
1983	63,730	21
1984	51,429	16
1985	81,990	23
1986	91,513	30
1987	87,758	28
1988	112,690	32
1989	130,650	35
1990	168,813	40

SOURCES: C. E. Maguire, Inc. *"Cargo Facility Economic and Technical Feasibility Study," 1983. Booz Allen & Hamilton, Inc. "Analysis of the Market Potential and Feasibility of New Port Development at Eastport," 1990.*

NOTE: Figures from 1981 to 1990 represent current forest-products operations.

AQUACULTURE AND TRADITIONAL FISHERIES

INTRODUCTION

Eastport has an in-depth heritage in commercial fishing. Although the industry has undergone substantial changes in the last decade, it continues to be a strong and growing segment of the local economy.

The Maine sardine industry started in Eastport around 1876. By 1880 the waterfront featured 18 canneries employing 1,860 (roughly the current population of the city).

Statewide sardine landings supported a variety of product applications around Maine. At the peak of Maine production, about 1950, related industries included fishmeal and fertilizer (12 plants), pearl essence plants (four plants) and pet food. The total value of the herring industry in 1950 was nearly $30 million.

Since 1950 the sardine industry has been negatively affected by the influx of foreign fleets, changing technologies and markets in the food industry that created more competition among a variety of food products, and the cost of bringing aging plants up to required environmental standards.

A 1979 inventory of Eastport by the University of Maine/University of New Hampshire Sea Grant Program counted 50 herring fishermen using weirs and seines, 20 scallopers, 20 men involved in the handling of groundfish and about 25 part-time clam diggers and two part-time lobster fishermen. Shoreside employment totalled about 300 people, including Holmes Packing Corp, Argenta Products Company, Maine Pearl Corporation and four plants operated by the Mearl Corporation.

Today Maine's sardine industry is controlled by five companies operating eight plants from Bath to Lubec — but not one is in Eastport. Mearl Corporation continues to operate in Eastport. The company is the only producer of natural pearl essence in the United States. The Eastport division purchases herring scales from local, independent boats for its processing operation. The product is shipped to a Mearl division in Peekskill, New York to be marketed to the cosmetics industry.

Eastport's current fishery is characterized by two segments: the traditional wild harvesters and a salmon and trout aquaculture industry.

TRADITIONAL FISHERIES

The traditional fishery is characterized by the rural, regional economy in which Eastport operates. While many fishermen harvest within sight of Eastport's shores, their actual home port may be a neighboring community or another town elsewhere in Washington County. Landings are difficult to track because business is generally conducted on a cash basis, featuring several "truck buyers" who operate wholesale businesses in other communities. Fish landed in Eastport, generally at the Municipal Fish Pier, are either consumed locally,

in the county or sold in the Portland and Boston markets. There is also some retailing by individuals out of their homes.

Between November and April the Cobscook Bay area supports a substantial scallop fishery of up to 30 boats, approximately one dozen of which operate out of Eastport. Approximately five of the Eastport boats may also fish for sea urchins at different periods during the year. The Eastport boats represent approximately 20 full-time jobs.

Between spring and fall nearly 20 small boats (mostly in the 20- to 25-foot range, with many featuring outboards) harvest cod and mackerel by handlining. These boats provide an estimated 30 part-time jobs, especially for older workers. A few boats participate in a small lobster industry.

According to the National Marine Fisheries Service and the Maine Department of Marine Resources, it is difficult to estimate Eastport's specific share of county landings because of the regionalness and ruralness of the fishery. However, Table I.2 shows how Washington County's Landings compare with statewide figures.

TABLE I.2
County and State Fish Landings
(in thousands)

	1989	1988	1987	1986	1985
Washington	9,918,495 ($4,740,253)	13,145,633 ($17,541,657)	15,095,048 ($15,899,932)	15,230,610 ($15,156,976)	13,959,610 ($13,517,327)
Cumberland	53,128,683 ($43,111,627)	49,324,394 ($40,788,937)	43,128,255 ($42,591,554)	35,689,520 ($27,822,684)	42,825,367 ($25,269,931)
Hancock	11,424,259 ($11,113,155)	17,287,287 ($17,423,824)	19,461,679 ($15,520,603)	21,820,945 ($13,150,190)	16,520,660 ($13,785,911)
Knox	29,400,292 ($15,546,150)	52,906,850 ($26,624,092)	58,909,105 ($25,894,295)	65,653,527 ($23,546,484)	78,276,241 ($27,887,980)
Lincoln	11,096,724 ($13,740,851)	15,984,913 ($14,248,875)	14,087,947 ($13,991,901)	11,435,494 ($12,455,595)	14,063,468 ($11,954,202)
Sagadahoc	3,670,057 ($3,449,890)	4,337,911 ($3,693,785)	3,389,449 ($3,706,914)	3,792,574 ($2,764,612)	4,246,965 ($2,439,802)
York	3,572,870 ($5,341,585)	3,757,325 ($5,839,726)	4,236,896 ($5,460,755)	4,402,224 ($5,060,845)	5,088,673 ($5,125,075)
State	151,139,703 ($132,531,714)	157,286,022 ($123,941,583)	167,391,633 ($132,421,779)	165,901,841 ($107,982,321)	114,780,984 ($99,980,228)

SOURCE: National Marine Fisheries Service

AQUACULTURE

Introduction. The Maine salmon and trout farm industry is less than 10 years old, but in that time Cobscook Bay has become the hub of the industry in the northeastern United States. Ocean Products Inc. (now Connors Aquaculture) was the first operation and continues as the largest Atlantic salmon farm in North America. Of Maine's 20 active grow-out sites encompassing 400 pens, 13 farms and 300 pens are situated in Cobscook Bay. Although some farms are situated in the nearby communities of Pembroke or Lubec, the majority are in Eastport, with Eastport the center of land-based support for the industry.

Table I.3 lists the aquaculture companies in Cobscook Bay.

TABLE I.3
Cobscook Bay Aquaculture Companies

1.	East Coast Fish Farms
2.	Maine Coast Nordic Enterprises
3.	Maine Pride Salmon, Inc.
4.	Maine Salmon, Inc.
5.	Nellie B. Fisheries, Inc.
6.	New England Fish Farming Enterprises
7.	New England Salmon Co.
8.	North Atlantic Aquaculture, Inc. (no cages)
9.	Connors Bros., Inc.
10.	Sea Farm Lubec, Inc.
11.	Sea Run Partnership (Inc.)
12.	Senorita Fisheries, Inc.
13.	Treat's Island Fisheries

SOURCE: Washington County Technical College, Marine Trades Center

The concentration of sites in the area is the result of two major factors:

- *Favorable geographical conditions.* The industry benefits from strong currents (up to 5 knots) and high tides (20-27 feet), ensuring good water flow and mixing between superficial and deeper water layers. This acts as a buffer that protects the region against the severely cold water temperatures registered elsewhere in Maine. Despite the risk of superchilled waters, the water temperature in the region rarely drops below 0°C, the temperature at which most salmonid species stop feeding.

- *Local tradition of fishing.* As stated in the introduction, Eastport's fishing heritage is deep. Local skills in fish harvesting, processing and marketing have always been driving forces in the economy.

- *Proximity to the more mature Canadian industry across Passamaquoddy Bay.* This facilitates the transfer of technology and support services such as pen construction and design, etc.

Economic and Infrastructure Impact. In 1988 eight growers generated an estimated volume of 1 million pounds. According to local industry representatives, production reached an estimated 12 million pounds in 1990. This would represent a landed value of $42 million. Statewide, farms employ an estimated 300 workers. With approximately 85 percent of the industry clustered in the Eastport area, local production would be estimated at approximately $35 million. The number of Cobscook area jobs would total approximately 200. Salaries for workers at grow-out sites are approximately $8 per hour.

Because there is no official reporting of aquaculture landings in Maine, there are often discrepancies in estimates. The local industry has assisted this project with landings figures. The local industry estimated 1991 statewide production at 21 million pounds worth $74 million. A 1990 study by the University of Rhode Island Cooperative Extension Service and Northeastern Regional Aquaculture Center estimates statewide 1995 production of at least 26 million pounds. With an historical price of $3.50/lb., this would generate a value of $91 million. However, it is uncertain whether historical prices will be sustained.

Table I.4 shows salmonid production through the years.

TABLE I.4
Statewide Salmonid Production

	Volume (lb.)	Value ($)
1988	1,000,000	4,200,000
1990	12,000,000	42,000,000
1991*	21,000,000	74,000,000
1995*	26,000,000	78,000,000-91,000,000

*Estimated

SOURCES: Maine State Planning Office, 1990; industry interviews, 1991; University of Rhode Island Cooperative Extension Service and Northeastern Regional Aquaculture Center

The evolution of the industry has had a dramatic impact in Eastport and Cobscook Bay.

- *Aquaculture has maintained and improved the commercial fishing heritage.* Many boats in the traditional fleet contract out to seafarms to transport smolts, feed and the harvest. In Lubec the R.J. Peacock Canning Company processes salmon for nine farms, complementing its sardine and sea-urchin business. Peacock estimates that approximately

50 jobs are directly associated with farmed salmon. At an average wage of $7 per hour, this would represent a payroll of $728,000. Peacock expects to more than double its processing capacity by 1993, from 3 million pounds a year to 7 million.

The largest aquaculture employer in Eastport is Connors Aquaculture, with approximately 60 workers, increasing to 100 during the warm-weather months. Connors is also planning to expand by relocating one of its Canadian processing operations to Eastport. This may add another 100 workers. Also planning to expand is Maine Pride Salmon. The company expects to add another cage site and improve its hatchery operation to improve capacity.

- *Use of waterfront facilities has increased.* Approximately one third of the 54 boats renting space in the city-controlled breakwater inner basin are associated with the aquaculture industry. The basin is used to capacity, with the exception of minor increases in space possible through a different float layout.

  The breakwater itself, the primary purpose of which is to serve as a cargo pier, has become a staging area for pen construction and repair, a storage area for excess netting, chain and buoys, and a platform from which to load feed.

  Across the city at Deep Cove, the waterfront facilities of the Washington County Technical College Marine Trade Center also service the industry. Fish farmers use a portion of the center's campus as a staging area and the center's boat ramp for access to pen areas.

  At present the Marine Trades Center has implemented the Aquatech Training Program sponsored in part by the Washington County Technical College, the Quoddy Job Opportunity Zone, the University of Maine Cooperative Extension Service, the Sea Grant Advisory Program and the Cobscook Bay Finfish Growers Association. Through a half-time coordinator, the Aquatech program has provided support to the industry in the form of workshops and seminars on industry-chosen topics of particular significance.

- *Creation of user conflicts in central waterfront area.* Increased commercial dockage and commercial use by the fishing industry has created several use conflicts in the breakwater area. Activities associated with all of the inner basin boats, commercial or recreational, create congestion and pier-use problems for the breakwater cargo landing. Transient recreational boats add to the already congested dockage areas. The general activity inside the basin and on the breakwater often means that traditional fishing boats such as groundfish or scallop draggers cannot get access to hoists or easily unload their catch.

  Because berthing space is at a premium, fishermen use dockage techniques such as double and triple rafting (some boats raft 6 deep). This results in time inefficiencies in maneuvering a vessel to either enter or leave a dockage area. In addition, the breakwater area has come to serve many users: the Port Authority and Federal Marine stevedoring operations, cargo ship and barge dockage, tug dockage, general

boat dockage, Coast Guard and Border Patrol dockage, public landing, boat ramp and even a hot-dog stand.

Issues Affecting Industry's Future. According to industry representatives, Cobscook Bay will experience few increases in the number of farms, but existing farms have much expansion potential.

As stated earlier, 1991 production is estimated at 21 million pounds worth $74 million and 1995 production is estimated at 26 million pounds.

Industry representatives urge caution on growth projections. The aquaculture industry is faced with serious marketing, regulatory and financing issues. Several predict static growth over the next two years, with a possible growth of 25% in three to five years. Nevertheless, aquaculture's track record illustrates a remarkable growth pattern.

As aquaculture matures, it will present a number of entrepreneurial opportunities in support infrastructure: services such as diving, net repair, transportation, diesel- and outboard-motor service, boat and barge construction, cage construction, processing, packaging, and ice-making and supply. In addition, there will continue to be various part-time positions available to workers in the traditional fishery to complement their existing operations. New species development is underway in halibut and seaweed.

Aquaculture use of the breakwater will continue. It is easy to access from downtown, offers ample staging area, provides the safest berthing in the city. More boats are using the Marine Trades Center area, a practice that should continue. Two areas of access for the industry are necessary, with the Marine Trades Center able to accommodate downtown overflow.

The Marine Trades Center is well-positioned to assist the industry in its growth. The center is currently developing a plan to build upon its services to the industry: The center will soon become the site of a disease diagnostic-support facility. The facility is funded by the Maine Aquaculture Innovation Center. It will be staffed by a graduate student from the University of Maine, with assistance from Maine Pride Salmon Company and Moore-Clark Feed Company of St. Andrews. The center's proposed Finfish Research and Training Center would:

- *Upgrade the Aquatech Coordinator's position* with an increase in duties ranging from coordination of research projects to data collection of baseline environmental conditions (in conjunction with the Department of Marine Resources); and

- *Establish a curriculum* with post-secondary educational institutions for the development of a degree credit technical training program.

Industry constraints include regulatory difficulties, problems regarding access to capital and the price stability of salmon. State and federal aquaculture permitting agencies are currently cooperating to try and make the lease process less complex (which may make the process less expensive as well). Access to capital is a continuing concern because traditional

lending institutions view aquaculture as high risk. The Maine Aquaculture Innovation Center has funded a project seeking to create more cooperation between fish farmers and lenders. Price issues are caused by sweeping market changes related to imports and the lack of consistent domestic distribution system for farmed product.

A major issue for the industry is the need for clean water. In early 1991 the National Marine Fisheries Service awarded the Maine Aquaculture Innovation Center and the University of Maine a $249,732 grant to study the effects of salmon pens on the marine environment. However, the industry is also dependent upon the maintenance of clean water from land activities (point and non-point runoff), shoreside construction and boating. These will be important water-quality areas as use of the waterfront grows with a variety of activities.

Other issues for the local industry include the continued need for shorefront access, infrastructure support such as ramps and dockage and coordination with the siting of port facilities on Estes Head.

TOURISM

INTRODUCTION

Tourism use of Eastport's waterfront comes in many forms. Tourists include visitors to the city's hospitality businesses, boaters who trailer their craft over public landings, Canadian shoppers arriving via boat over Passamaquoddy Bay, and sightseeing passengers on a whalewatch boat or ferry. A tourist can be a traveller from either in- or out-of-state, a friend from a neighboring town or a family member visiting for a summer vacation.

In this chapter tourism issues affecting the Eastport waterfront are analyzed from the subject areas of boating, water transportation and the hospitality industry.

Information from this section comes from interviews with local businesses, the project oversight committee, harbor master records, the Maine Office of Comprehensive Planning, the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Conservation, the National Marine Manufacturers Association, the Quoddy Region Job Opportunity Zone, the National Marine Fisheries Service and the U.S. Customs Service.

BOATING

Infrastructure. Eastport has the most boating facilities and support services of any community on the U.S. side of Passamaquoddy Bay. It is a full 30 miles by highway and nearly a day-long sail to the nearest boat service area (Jonesport).

Table I.5 lists the boating infrastructure.

TABLE I.5
Eastport Boating Infrastructure

- *The Marine Trades Center:* 60-ton Travellift, 420' x 20' pier, boat ramp
- *Breakwater Area:* 54 berths in inner basin, 20 more on north end of breakwater, public landing, boat ramp
- *Cannery Area:* Boat ramp
- *Northeast Marine & Fuel Depot:* 8 slips, 11 moorings, fuel, groceries, ice, repairs, oils and lubes
- *Moose Island Marine:* Marine supplies, charts, dockside service on outboards and stern drives, boat sales, service storage
- *Eastport Boatyard & Supply:* Maintenance and repair, haul and launch, storage, construction, design

Market Characteristics. Maine cruising guides rank Eastport positively. One publication rated the city four stars, a designation described as "very attractive or interesting. Worth going out of your way." Eastport is considered a well-protected anchorage. A variety of boating infrastructure-related services are available to boaters.

According to private companies and the U.S. Customs Service, transient use of the waterfront has steadily increased in the last five years.

Between 1988 and 1990 recreational-vessel trips to Eastport increased from 1,659 to 1,850, up 191, 11.5%. Approximately 75% of the vessel trips are by Canadians from the nearby islands of Deer and Campobello. Most of the vessel trips occur in July, August and September. As many as 1,000 vessel trips will be recorded during that period, mostly on weekends (an estimate of 40-50 boats/day). Canadians use Eastport for shopping — fuel, alcohol, groceries, etc. *Business Week* magazine estimated that gasoline, alcohol and tobacco costs twice as much in Canada as in the United States. Diary and poultry prices are approximately 60% higher in Canada.

The Custom Service also keeps specific track of boats 30′ and over because of a user fee it charges. Between 1985 and 1990, vessel trips increased from 50 to 80, up 60%. This represents increased cruising traffic by United States citizens, according to a Custom Service representative.

At least 25 boats per weekend are using the launch ramps near the former Cannery Restaurant and at the Breakwater. The number of races involving yacht clubs from both the U.S. and Canadian sides of Passamaquoddy Bay have increased from two in 1990 to 11 in 1991.

Economic Impact. Both the city and the private sector have been responding to boating growth in an incremental fashion.

The City of Eastport collects boat excise taxes and berthing fees and earmarks the funds for two inner basin funds. About $15,000 is collected annually. At the beginning of 1991 the fund balance equalled approximately $40,000. In 1991 the fund paid for dredging of the inner basin ($15,000), strengthening the connection areas of berthing floats ($5,000) and helping to add berthing floats on the north end of the Breakwater ($16,000). The city also received a $16,000 State Waterfront Action Grant to assist with the berthing-float project.

In the private sector an 8-slip marina opened in 1989, featuring year-round fuel service. Two existing firms in boat repair and marine supply have expanded service and product lines. One of the firms may build a marina. Revenues are now more evenly divided among commercial and recreational accounts, with recreational activity a major growth area.

Market Demand. Many state agencies and communities have sought to quantify market information over the last several years. This has been a response to boating growth and its impacts on coastal access, harbor use, harbor management and relationship to the fishing industry.

The most recent studies include:

- the National Marine Manufacturers Association, the major trade and information-gathering association for the nation's boating industry, predicts an annual 4% growth in boating through the end of the decade;
- the 1988 State Comprehensive Outdoor Recreation Plan by the Bureau of Parks and Recreation predicts annual growth of 1%-4%, with highs of 5%-10% in a strong economy;
- a 1989 study conducted for the City of Portland predicts annual growth of 5%;
- a 1990 study conducted for the New Hampshire Port Authority projects annual demand for facilities at 8%;
- a draft 1990 study of York County by the Southern Maine Regional Planning Commission (SMRPC) summarized study efforts in New Hampshire, York County and Cumberland County. The SMRPC cited scenarios of 3%-11%, with an estimated likely demand in York County of approximately 8%.

The nature of boating demand in Downeast Maine is different than demand in Southern and Mid-Coast. Southern Maine has a relatively large year-round population base and a large summer-visitor influx. The Mid-Coast area, except for recognized vacation areas such as Camden, relies on substantial demand generated by inland communities such as Augusta and Waterville. The nature of boating demand in Eastport comes from four areas: local residents, residents of Washington County and inland residents from Maine (e.g., Bangor area or Aroostook County) and Canadians, primarily Campobello Island and Deer Island (but also including St. Andrews, St. John and Grand Manan Island). The boating studies and assessments listed earlier indicate boating growth of 1-4% in a slow economy and 5-10% in a strong economy. These figures are probably accurate for Eastport as well.

Passenger Vessels. Another segment of the waterfront-use market that has grown incrementally is water transportation, including ferry transportation and use of tour and charter boats.

East Coast Ferries, Ltd. (ECF) operates daily passenger and vehicle ferry services between Deer Island, N.B. and Eastport, and Deer Island and Campobello, N.B. ECF operates two ferry boats. The Deer Island-to-Eastport ferry has a capacity to carry eight vehicles, and the Campobello ferry can carry up to 12 vehicles. Both ferries are licensed to carry 31 passengers. A new operator assumed ownership of ECF in 1990, the first ownership change in 20 years for the company. The new operator has no plans to change service in the near future. However, there is discussion about experimenting with service between Eastport and Lubec. According to the U.S. Customs Service, approximately 2,000 vehicles a year use this service.

The number of tour- and charter-boat business has doubled in the last two years. Tour- and charter-boat operators include the Quoddy Dam, the Vinland Express and Northeast Charter. The boats feature scenic cruises and whalewatch tours.

Cruise ships currently are not making calls in Eastport, although there have been visits in the past. A potentially lucrative travel area, Eastport needs to pay attention to infrastructure, marketing and shoreside attractions. Cruise ships represent one of the fastest growing segments of the travel industry. The economic impact to a community includes dockage fees, ship services, support industries (tour buses, car rentals, etc.) and spending estimated at $60 per passenger. With ships carrying 800 to 1,000 passengers, a ship call would have strong downtown benefits.

Hospitality Industry. The number of restaurants and lodging places in Eastport has grown from 10 to 14 in the last five years. Table I.6 illustrates the growth in this industry as illustrated by state consumer sales statistics. According to the table, taxable sales for Eastport's restaurant and lodging industry increased from $863,400 in 1988 to $1,305,600 in 1990, up 51.2%. (The city's overall consumer sales increased 30.1% in the same period.) According to the state tax data, the restaurant and lodging industry represents approximately 15% to 20% of the city's economic activity.

TABLE I.6
Restaurant/Lodging Taxable Sales ($000)

YEAR	RESTAURANT/LODGING TOTAL	CONSUMER SALES	RESTAURANT/LODGING % OF CONSUMER SALES
1988	863.4	5,609.4	15.4%
1989	1,215.3	6,250.8	19.4%
1990	1,305.6	7,258.8	17.9%
Increase 1988-1990 — +51.2% (Restaurant/lodging) Increase 1988-1990 — +30.1% (City overall consumer sales)			

SOURCE: *Maine Bureau of Taxation*

SECTION II

INFRASTRUCTURE STRATEGY

INTRODUCTION

The need for an infrastructure strategy has been created by increased use of waterfront facilities by the shipping, aquaculture, recreational boating and tourism industries. The development of the strategy has focused on the need to relieve congestion at the Breakwater, find alternative berthing and mooring locations and recommend specific locations for commercial and recreational use.

The strategy has been developed using the following methodology:

- use of an inventory and analysis of waterfront use (see "Assessment of Waterfront Use" in Section 1) to determine the needs of waterfront users;
- the use of information from existing port infrastructure efforts affecting Eastport, such as the 1990 "Planning Study of Maine Coastal Port and Harbor Needs," a State-sponsored effort that identified several Eastport improvement projects;
- interviews with members of the Project Oversight Committee and waterfront users, including representatives from the shipping, aquaculture and recreational boating industries;
- a technical review of potential sites using a wave analysis, which determines the relative safety of areas for boat and dock use.

Analysis of Waterfront Use

- *The Port of Eastport has far outgrown its existing facilities.* Volume exceeds capacity by a factor of eight (8). Approximately 60 trucks of logs per day overwhelm downtown and the adjacent residential neighborhoods over a 15-day ship call. (Truck traffic can range as high as 120/day over a 12-hour shift.) Nearly every available lot in the city is used for log storage. Facility limits are the biggest obstacle to developing new business and keeping existing business.

- *Increased commercial dockage and commercial use by the fishing industry has created several use conflicts in the breakwater area.* Transient recreational boats add to the already congested dockage areas. The general activity inside the basin and on the breakwater often means that traditional fishing boats such as groundfish or scallop draggers cannot get access to hoists or easily unload their catch. Berthing space is at a premium. This has led to dockage techniques such as double and triple rafting (or even rafting 6 abreast, causing time inefficiencies in maneuvering a vessel to either enter or leave a dockage area.

- *Aquaculture is expected to continue its growth in the 1990's.* Approximately one third of the 54 boats renting space in the city-controlled breakwater inner basin are associated with the aquaculture industry. There is a need for an alternative berthing and mooring area. The industry is in need of ramp facilities specifically designed for barge use.

- *Recreational boating is on a gradual growth pattern that is adding to inner basin congestion and creating new opportunities for serving the market.* Transient-vessel trips have increased nearly 6 percent annually during the late 1980's, with boat visits by crafts 30′ and over increasing approximately at twice that rate (12%). Local use of boats is expected to increase 1% to 4%, with 5%-10% increases in a strong economy.

- *Tourism accounts for between 15 percent and 20 percent of Eastport's economy.* Taxable sales from restaurant and lodging increased at an annual rate of approximately 17% in the late 1980's. This will create more opportunity for tour and charter boats and more demand for dockage and overall public coastal access.

PAST STUDIES

In 1990 a state government interagency committee completed a statewide infrastructure assessment entitled, "Planning Study of Maine Coastal Port and Harbor Needs." Seventy (70) priority projects were identified statewide, for a total of $11.7 million. Three projects were identified in Eastport:

- extension and repair of the Breakwater (North End);
- a float system for the Fish Pier;
- repairs and installation of cathodic protection for the Fish Pier.

These projects are explained further in the wave-analysis section of this chapter and in the chapter on financial strategy (Section III).

WAVE ANALYSIS

As part of the search to locate sites for satellite facilities to supplement the Inner Basin at the Breakwater, wave studies were performed for the following locations:

1) North End at the Breakwater
2) The wharf at the former Cannery Restaurant
3) The Fish Pier
4) Deep Cove near the Trades Center Pier
5) Broad Cove

All of the studies analyzed wind-generated waves. Maximum wave heights were determined using the longest effective fetch at each location. Fetch is the distance that the wind travels over the water as it generates waves. The term "effective fetch" is a modification of fetch that takes into account obstructions or land masses that influence wind speed. By combining the various measured fetch lengths into one effective fetch length, it is possible to determine a suitable distance for calculating wave characteristics that are very close to those that occur naturally. As stated earlier, a wave analysis determines the impact on docks and boats of wave action. This data helps determine the relative safety of different mooring and dockage locations. A wave measuring over 2.5 feet is enough to endanger a floating dock or present potential damages to a boat moored to a dock.

Each of the five sites had different potential maximum fetch lengths from a variety of directions. For example, the greatest fetch length for the North End of the Breakwater was from the northeast while at Deep Cove the greatest potential for wind-generated waves was from the west. In New England it is certainly general knowledge to anyone with an interest in coastal waters that fair-weather breezes come from different directions than storm winds. In the summer the fair-weather breeze usually comes out of the southwest or south. In the winter fair-weather winds frequently are from the northwesterly quadrant. For the purposes of this report, the term breeze is used to indicate a light wind of from four to just under twenty miles per hour, while the term fair-weather winds could include winds up to forty miles per hour. We recognize that this broad classification of fair-weather breezes and winds is not in accordance with the Beaufort Scale, but there is little need to break wind speeds down into eight force numbers for discussion of potential wave heights to be expected during fair weather.

Storm winds are, of course, traditional Northeasters as well as severe storm winds, which are the product of tropical disturbances moving northerly up the eastern coast of the continent. Severe tropical cyclones or hurricanes rotate about an eye in a counterclockwise direction north of the equator. Consequently, if the eye were to pass east of Eastport, the storm winds would start from the east and shift first to northeast then north then northwest and finally west. If the eye were to pass to the west of Eastport, the land mass will usually reduce the intensity of the storm. However, the winds would again begin in the east, but shift to the southeast, then south, then southwest and end finally from the west. From the above it is fairly clear that there is potential danger from storm winds from almost any direction, but the most common storm wind is from the east or northeast.

The strongest recorded wind velocity at Eastport was in December 1917, when an 83 mph wind from the east was recorded for just less than a minute. However, it is necessary for winds to be sustained for more than just a minute to develop waves. Consequently, for the wave studies the following velocities were adopted.

Direction	Wind Speed
N	58 mph
NE	76 mph
E	69 mph
SE	62 mph
S	57 mph
SW	45 mph
W	44 mph
NW	49 mph

The above velocities were sustained for more than 20 minutes. This length of time was chosen to reflect the duration of time required over the fetch distances available to generate waves. Sustained velocities that last less than 20 minutes do not last long enough to develop the full potential wave height for wind velocities greater than those above while because of fetch length limitations the maximum wave size does not increase significantly even if the velocities are sustained for greater than 20 minutes.

All wave calculations are based upon wind-generated deep-water waves and no modifications have been made to the calculated results for tidal currents or shallow-water depth.

North End of the Breakwater

This area is open to both the east and the northeast and to some extent open to the north, but is relatively sheltered from winds from other directions.

Easterly winds can develop a height of 2.6 feet with a wave length of 37 feet. Northeasterly winds are expected to develop waves 3.25 feet high with a length of 46 feet. Northerly winds would build to a height of 2.2 feet with a length of 32 feet under the design conditions.

Floating docks in this location would be usable only during fair summer weather. Boats using floating docks here should not be left unattended for more than a few hours. Strong winds from any part of the northeast quadrant could be hazardous to small craft tied to docks in this area, and the docks themselves are susceptible to damage during storm periods. Connections between floating units and anchoring devices such as piles would be the first segments to show wear during a storm. Other structural damage to the floats themselves would follow failure of connections and anchors. A floating breakwater might

be considered, but we would anticipate the width of such a breakwater would have to be near 50 feet as a minimum.

The proposed MDOT waterfront facilities' bonding program does include $500,000 (the maximum cost per project under the program) to repair and extend the Breakwater northward. Some of the sheet pile in the existing structure is quite badly eroded. If repairs to the existing structure are not excessive and the Breakwater can be extended, the small boat area behind the new breakwater would be much safer than it is today. Extension of the Breakwater is far more preferable than any type of floating breakwater. However, cost is a factor that must be addressed. Until repair costs are better known and the bond issue is a reality, the extension of the Breakwater has an uncertain future.

Fish Pier

The outer end of the fish pier is exposed to the northeast, the east, the southeast, and the south. However, since it is constructed of sheet pile caissons small boats can seek shelter in the lee of the pier under certain conditions and, of course, the Breakwater does provide protection from the most damaging winds from the north and northeast. Because of the shelter from the Breakwater, the relatively short fetch to the east and the normal wind characteristics of lower wind velocities from southerly directions, the maximum wind-generated waves on the outer end of the fish pier all range between 2.2 and 2.5 feet. The calculated values are as follows:

Direction	Height	Wave Length
NE	2.45 ft	32 ft
E	2.20 ft	32 ft
S	2.50 ft	32 ft
SE	2.25 ft	32 ft

With waves of these heights, small craft should not be tied to docks under maximum wave conditions. Floating docks at the fish pier would be usable either on one side or the other much of the time by small craft loading-unloading of gear and product but use of this location for berthing on a regular basis should be avoided.

These floats should be of the best quality and strongest construction available. The floats would have to utilize the strongest possible float guides and hardware to remain in position without damage. A cost-effective solution would be to install log camels, which span between the caissons and hold small craft away from the structural members of the pier. The cost of the logs should be inexpensive enough to allow for periodic replacement if they are damaged. Also, there is no need to hold them in place as accurately as is necessary for docks. Consequently, a rope or cable system with counterweights would be sufficient. Used vehicle tires would be appropriate for any fenders or padding to protect the boats.

An attempt was made recently to install floating docks in a line from the Fish Pier and extending approximately parallel to the shore into the basin formed by the Breakwater. Floating docks in this location would be subject to smaller waves than at the outer end of the Fish Pier. However, ledge in the harbor floor prevented the normal installation of piles to hold the floats in place, and work stopped.

The docks can be moored in place with a system of chains and anchors, as shown in Figure II. The slack in the chains at low tide would permit the floating docks to move as much as nine feet horizontally. Consequently, a "bridge" or gangway must be provided between the floats that are firmly held in place by the Fish Pier and the moored floats, which are expected to move. The "bridge" must be fairly light in weight and be able to slide over the dock surfaces as movement takes place. Frequently such bridges are tied in place or only fastened on one end. As can be seen in Figure II, the mooring system and all of the necessary gear are not simple. The construction cost would be in the range or $80,000 to $85,000.

However, the simpler layout originally proposed with pile supports could be used if steel pipe piles filled with concrete were placed in holes drilled into the ledge. When this option was proposed some months ago, an expense of $3,000 per pile for drilling the ledge was estimated. Since that time, TEC Associates has been involved in a project in Kennebunkport where the marine contractor persuaded a well-drilling company to place one of their drilling rigs on the contractor's barge. Actual drilling time for two ten-foot-deep, 12-inch diameter holes was about one day. There was a lot of time lost loading and unloading the well-drilling rig, but overall, the total cost was considerably less than $3,000 per hole. The recommendation is for at least one pile per float. However, piles on similar long, narrow docks have been separated by as much as forty feet when the docks and piles were relatively strong. The cost for this system could be approximately $10,000 less than the chain system. These estimates reflect the reduction in construction during 1990-1991. Costs will once again rise as times improve. However, if not too much time elapses before the State bond issue for waterfront improvements becomes a reality, then the $100,000 earmarked for this project in the bond issue will be sufficient for the steel-pile-drilled-into-ledge system. The construction cost estimate does not include engineering, financing, insurance, etc. These so-called "soft costs" can frequently add 25% to the raw construction cost, so that there is not a lot of room for inflation in a $100,000 budget. However, the cost estimates do show that drilling into the ledge and inserting steel-pipe piles is the most cost-effective method of installing floating docks in this location.

THE WHARF AT THE FORMER CANNERY RESTAURANT

The small cove where the ferry from Deer Island lands on the beach and where the former Cannery Restaurant is located is much more protected than the area just north of the Breakwater. The distance between the two areas is not great, but the cove is just far enough north and west that Deer Island, Indian Island, Cherry Islet and Thrumeap Islet reduce the fetch available to generate waves. Consequently, the wave characteristics calculated for this cove are as follows:

Direction	Height	Wave Length
E	2.50 ft	37 ft
NE	2.75 ft	39 ft
N	2.00 ft	30 ft

These waves are small enough to make use of floating docks practical for all but the worst winter weather. The existing fixed pier at the site is too low and too lightly constructed to be considered for reconstruction. However, the fact that it is there and its piling remains in place indicates that floating docks could be held in place with piles. A line of floating docks that ground out when the tide recedes could be installed from the timber bulkhead adjacent to the ferry parking area and extend parallel to the building and existing fixed pier out into deeper water. At one time the restaurant had floating docks in the area just beyond the end of the fixed pier, and they were used by a number of recreational boats. It is suggested that this area and the proposed floating docks be used for recreational boats in order to reduce the congestion at the Breakwater. See Figure III for schematic layout. The area is near enough to walk to downtown and could be very practical for people who wish to tie up for time periods ranging from a few hours to a day or so.

Floating concrete docks probably are strong enough to withstand the wave action even in winter, but we do not know of any concrete docks that regularly ground out on a beach such as would be required here. In general the concrete docks are built in relatively long sections and would be subject to grounding two times a day. Wooden docks that were removed each fall might be more practical because of lower initial cost, although the expense of hauling and reinstalling docks each year cannot be ignored. The State of Maine has had reasonably good success joining together relatively short sections of wooden floats with rods and eyebolts at numerous tidal launch ramps. The floats have wooden skids to protect the floatation material while the rods and eyebolts provide a hinge action.

This location is privately owned. However, the site is for sale at this time. Consequently, the City may be wise to consider purchasing the property to provide this much-needed additional access point and defray part of the cost by leasing the restaurant to private enterprise. At a minimum, the area should continue to be zoned to encourage recreational boating use.

DEEP COVE

Deep Cove is well protected from storms out of the northeast quadrant and the inner portion of the cove is also fairly well protected from the strong northwest winter winds. The calculated wave characteristics for Deep Cove are as follows:

Direction	Height	Wave Length
SW	1.45 ft	25 ft
W	1.82 ft	32 ft
NW	1.90 ft	32 ft

Based upon the wave characteristics and its location plus the existing facilities (e.g. the old sea-plane ramp, the relatively new pier, the boat yard and the travel lift trestle), it would seem natural to proceed to develop Deep Cove in order to reduce the congestion at the basin downtown. Upon initial examination it would seem very practical to use the existing facilities as well as any new ones for servicing both aquaculture vessels and recreational craft. It is true that the old sea-plane ramp is at too gentle a slope for loading and launching of boats easily except on an incoming tide, but it is better than some natural beaches. We do not know of any attempt to load and unload barges with the travel lift, but similar machines are used for transporting lumber and other bulk cargo all the time. We understand that more and more aquaculture operators will be using small self-propelled barges for servicing their pens in the relatively near future. The travel lift or some similar machine using the travel-lift trestle may be a cost-effective cargo transfer device.

However, a ramp which would allow backing a trailer truck onto a barge would be the most cost-effective method for transferring cargo to and from the pens. The existing old sea-plane ramp is just too flat, so that the loaded barge cannot back away from the shore until the tide comes in and raises the loaded vessel up off the bottom. A ramp with an acceptable slope should be steep enough so that the barge or landing craft stays afloat and only the built-in vehicle gangway touches the ramp on the shore. Normally this type of operation only takes a few minutes. The vessel arrives at the ramp, lowers the vehicle gangway and the barge engines are kept in forward gear at low rpm, so the bow of the vessel is held into the shore. Once loading is complete, the gangway is raised and the barge backs away from the land, so that it can proceed to its next destination. The best slope for a ramp to be used for this type of operation is between twelve and fifteen percent. At any slope flatter than 12 percent, the barge grounds out. At any slope steeper than 15 percent, the trailer truck will have a problem gaining enough traction to negotiate the slope. It might even be prudent to provide a winch and cable at the head end of any steep ramp. Such a winch and cable could aid in overcoming loss of traction due to moisture and/or marine growth on the ramp.

It is believed that adjacent to the old McNichols fuel dock on the north side of the cove, there is a suitable site for just such a ramp. Needless to say, this is privately owned land and would need to be purchased. If it is decided that this is an appropriate course of action, it will be necessary to purchase not only ramp land but an area for vehicle parking as well.

Ramps used for barge and landing craft loading have erosion problems that are not normally associated with the ordinary boat-launch ramp. Even though the vessel engine only has to turn over at low speed to hold the craft bow into the shore, the propeller still creates a current. This current tends to wash away the soil particles in the ramp and soon causes significant holes in any earth ramp that is not replenished by natural means. On ramps that are paved this same mechanically-induced current washes the soils out of any cracks or

holes in the pavement. As the process proceeds, the loss of soil causes the pavement to crack, move, break up, and eventually collapse. Any proposed barge-loading ramp must be carefully designed and constructed to combat propeller wash erosion. We recommend that a soils engineer examine the beach adjacent to the old fuel dock before any money is spent to purchase the property. If the soils on site cannot be readily protected from erosion by geotextiles and crushed stone, the constant repairs to the ramp will be too expensive to be worthwhile.

Increased usage of the cove will require that mooring areas and channels be established if chaos is to be avoided. At present there are three manmade objects that must be considered in any planning for the cove. In random order, these items are the cable area, which extends from just west of the old fuel dock to Seward Neck; the salmon pens; and the dock owned by the Marine Trades Center.

The cable area is obvious on the marine chart of the area and precludes any moorings near the cable. However, there is no reason it cannot be used for a channel and moored boats could swing over it to a limited extent as long as no ground tackle encroaches upon the area.

The salmon pens are moored in 12 to 13 meters of water at low tide. At high water the depth increases by 5.8 meters, so the mean high-water depth is about 60 feet. The Army Corps of Engineers recommends a clearance for floating structures of three times the water depth or in this case 180 feet. With this clearance around the pens about 13¼ acres of cove is no longer available for moorings or channels.

The pier extends out into the cove about 435 feet and has about 12 feet of water at its outer end. This means that good-sized vessels can utilize the pier without fear of going aground. Since it is suitable for larger boats, we recommend that an area about 250 feet by 250 feet be reserved off the end of the pier for large boat maneuvers in connection with the pier.

Since the boats using the cove may be fairly wide barges, we recommend that any channels in the cove be 150 feet wide at a minimum.

In discussion with Trades Center personnel, it was agreed that moorings in the cove should have chains that are 2½ times the high-water depth in length. Consequently the chain lengths have to range from about 88 feet to about 130 feet. With allowance for the mooring pennant plus the length of the boat, we estimate that in five meters of water at low tide, the stern of a 40-foot boat will describe a circle 177 feet in diameter. Similarly, in 10 meters of water at low tide, that same 40-foot boat will describe a circle almost 354 feet in diameter. If there is to be no overlap between mooring circles, it is doubtful that there is room for more than six to eight moored boats of this size. We suspect that there are more than six or eight moorings in the cove today simply because there is some overlap of mooring circles and there are no reserved areas for channels, maneuvering and clearance.

Considering the above, it is not very practical to look to Deep Cove as an area to moor boats. If there are no other areas and Deep Cove must be more highly utilized, it will be more practical to construct a small marina or group of floating docks to form slips. Figure IV shows a schematic layout for 20 boats adjacent to the Trade's Center Pier.

Deep Cove is useful, but because of manmade objects already in place, we cannot recommend extensive development. However, it is relatively near a number of salmon pens and would be a good location for a launch ramp used by commercial interests on work days and by recreational boaters on weekends. Construction of a ramp is predicated upon suitable soil conditions.

BROAD COVE

The interior of Broad Cove is relatively shallow. Much of the deeper outer portion of the cove is occupied by salmon pens. We estimate that the pens plus appropriate clearances make up an area of between 35 and 40 acres. Shackford Head, on the west side of the cove, is for the most part either owned by the City or by the State, and a recreational area has been planned for it by the State Department of Conservation. There is considerable area between two and five meters deep at low tide between the salmon pens and the shore north and west of the pens. The area is protected from all winds except those out of the south quadrant which are calculated to produce waves with a maximum height of 2.25 feet and maximum wave length of 32 feet. The pens may even tend to reduce the size of the waves, so that the maximum wave may be nearer 2 feet in height. Boats at moorings can withstand larger waves than boats at docks.

A depth of two meters is relatively shallow, and any reefs, rocks or ledges on the bottom could be quite dangerous. However, the cove in general appears to be a mud bottom and could be utilized by recreational boats on moorings. The shallower areas would be suitable for boats 20 and 25 feet overall, and the deeper areas could be used by boats up to 40 feet long. Depending upon the size of boats moored and the willingness of owners to allow their boats to ground out on extreme low water, we estimate that 20 to 30 recreational boats could easily be moored in Broad Cove. If the area is to be used this way, it will be necessary to construct a pier with a floating dock and gangway where boat owners can tie up skiffs and small boats used to access their moored craft. No in-depth study has been made, but it would appear that the area owned by the State is more suitable for a dock because the distance between high ground and sufficient water for small boats is less than it would be from City-owned land.

Recreational boating would tie in well with land to be used for recreational purposes. A wide channel could be set aside just east of Shackford Head and at least 250 feet from the nearest pen. If the boats using the area are truly recreational, the traffic in and out of the area will be relatively low and may not exceed more than ten or 15 boats on a Saturday or Sunday. Marina use on peak days in Maine ranges from 25% to 50%. Use of mooring areas would be similar.

The concept plan for this idea is shown in Figure V.

ESTES HEAD

A new cargo pier has been proposed to supplement or replace the existing cargo-handling facilities at the breakwater. The location and any details of the proposed pier are beyond the scope of this report. However, it is believed that the new pier will be located at Estes Head adjacent to land now owned by the Port Authority. This location is protected from strong winds out of the northeast quadrant and in many respects would be preferable to the location of the existing facilities. There is deep water close to the shore, so that no dredging will be required. In fact, the substantial depth will require creative pier construction and layout of the facilities. Additional boat dockage may also be included in the overall plan.

Mooring of LASH barges has been proposed south of the breakwater and east of Water Street. This is a relatively exposed position, and if a new cargo pier is to be built at Estes Head, it may be appropriate to moor the LASH barges at an area nearer the new pier. Areas both south and west of the proposed pier site may be appropriate locations to moor LASH barges in groups of fifteen.

OTHER INFRASTRUCTURE ISSUES

Based on interviews with the harbor master and waterfront users and analysis of several project options, the following issues have been addressed:

- *Existing layout of berths in Inner Basin of Breakwater.* Alternatives were sought to the existing layout. However, the harbor master has maximized available space with the existing plan. No changes in layout are necessary. Futhermore, navigation and safety with the existing layout has been improved because of the recent dredging project. To prevent rapid sedimentation in the area, the catch basin emptying into the Inner Basin should be redesigned during the City's sewer-line project.

- *Alternative mooring sites for LASH barges.* A system is being developed by the Port Authority to create a new mooring area for LASH barges, eliminating the need to place them far within Cobscook Bay or to have them add to congestion at the Fish Pier. The barges probably will be moved near Treat Island.

- *Hoists at the Breakwater and Fish Pier.* Plans need to be developed to relocate the hoist at the Breakwater because increased use of the Breakwater has made access to the hoist difficult. On the Fish Pier, a new hoist is needed. Access to the hoist would be improved through a new float system explained in this chapter.

- *Downtown parking.* Downtown parking issues related to waterfront use are not easily solved. The City must seek land-purchase opportunities near the Breakwater. The Port Authority needs to determine how its existing parking and storage areas may be used to assist with creating more parking capacity.

- *Moorings along the downtown waterfront.* At present there are a few moorings along the downtown waterfront stretching from just below the Fish Pier to near Buckman Head. These moorings are in fairly exposed waters and cannot be recommended except for use in good summer weather. The water in this area is relatively deep for practical moorings and rapidly increases in depth as the distance from shore increases. As time goes on, there will be additional moorings placed in the area, but their numbers will be limited. Both the exposure and the high cost of deep-water moorings will discourage the placement of moorings in this area to such an extent that mooring congestion will not be a problem along the downtown waterfront in the foreseeable future.

SUMMARY

Overall growth on the waterfront in shipping, aquaculture, recreational boating and tourism will continue to result in overuse of the Breakwater. The strategy for addressing this growth by industry includes:

- *Shipping*

  - Continue efforts to expand and relocate port out of downtown to Estes Head.
  - Develop a strategy for future use of the Holmes plant area.
  - Develop a strategy for use of the Breakwater area after the port relocation. Current considerations include:
    - continued use of berth by cargo ships (backup facility);
    - use of the berth by cruise ships;
    - determining use of facility by Federal Marine Terminals, Inc.
    - determining potential of property to provide parking for downtown waterfront use.

- *Aquaculture and traditional fishing*

  - A system of multiple access points is needed.
  - Use will continue in the Breakwater in the immediate future because it is centrally located to downtown.
  - Develop float system for Fish Pier (also usable for traditional fisheries)
  - More use of the Marine Trades Center area and Deep Cove should be encouraged for aquaculturists.
  - Support should continue for the Marine Trades Center Master Plan, which features an aquaculture research and training center.
  - Seek to develop a second ramp to provide aquaculture barge access to Deep Cove.

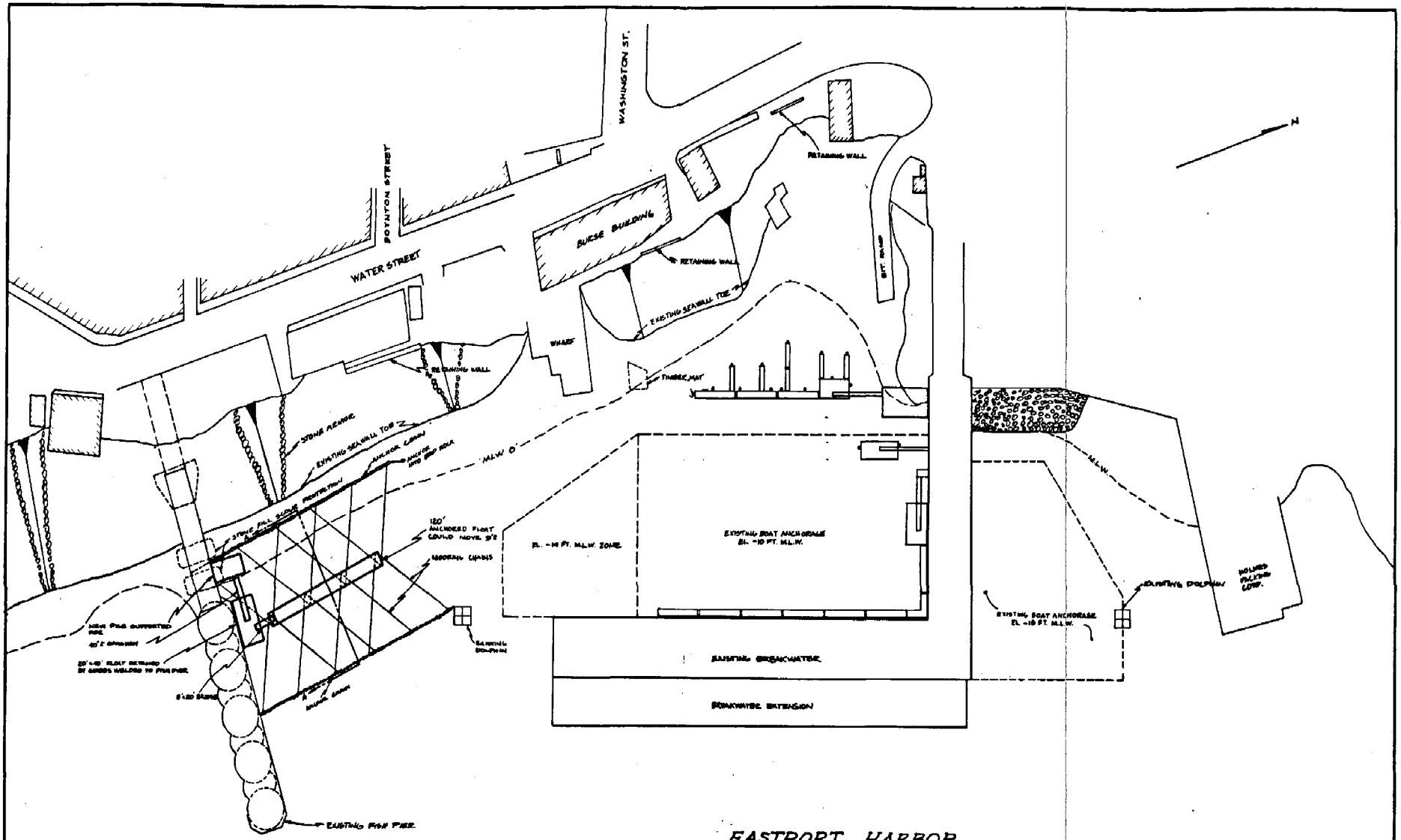
- *Recreational boating*

  - Continue use of north end of Breakwater, but expand only after opportunity comes to expand Breakwater, thereby creating another basin.
  - Encourage recreational development at former Cannery Restaurant area.
  - Allow use of moorings on a limited scale in downtown area between Fish Pier and Buckman Head.
  - Encourage continued recreational boating development at downtown properties whose owners currently service the industry.
  - Study possibility of mooring development in Broad Cove, taking into account the need to coordinate with the State regarding use of Shackford Head and the aquaculture industry regarding water quality.

These strategies are summarized in Table II.1.

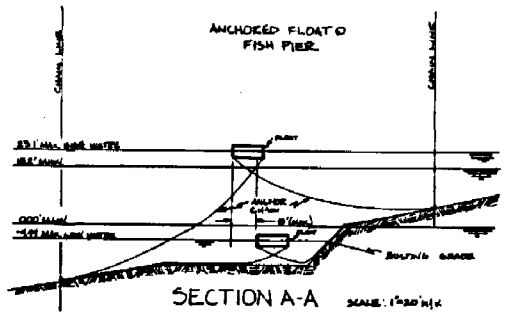
TABLE II.1
Infrastructure Strategies

ISSUE	POLICY OPTIONS
■ Congestion on breakwater and in inner basin ■ Cargo volume exceeds capacity by factor of 8 ■ Truck traffic impact on downtown and neighborhoods ■ Aquaculture continues growth, with more use of breakwater for dockage, staging, repairs ■ Recreational boating continues growth, creating more congestion at breakwater and new development opportunities	*IMMEDIATE (Now)* ■ Continue to support relocation of port out of downtown ■ Continue to direct recreational boats to north end of Breakwater ■ Continue plan to dredge inner basin ■ Redesign catch basin emptying into inner basin ■ Redesign berthing layout in inner basin ■ Continue aquaculture usage of Marine Trades Center ■ Continue study of Holmes Plant area for possible marine commercial use *SHORT TERM (1–5 years)* ■ Develop alternative location for barge moorings ■ Relocate hoist on breakwater ■ Add mooring floats near fish pier ■ Continue support for bond issue projects: – Breakwater extension and repair – Fish pier fender repair and cathodic protection ■ Support Marine Trades Center Master Plan ■ Investigate feasibility of potential port sites, especially Estes Head ■ Relocate small recreational boating to former Cannery Restaurant area ■ Allow limited use of moorings between Fish Pier and Buckman Head ■ Support private-sector recreational boating development *LONG TERM (5+ years)* ■ Develop facilities at Deep Cove for small boats and aquaculture work boats ■ Expand Breakwater ■ Study possible mooring area for Broad Cove



EASTPORT HARBOR

FRIAR ROADS

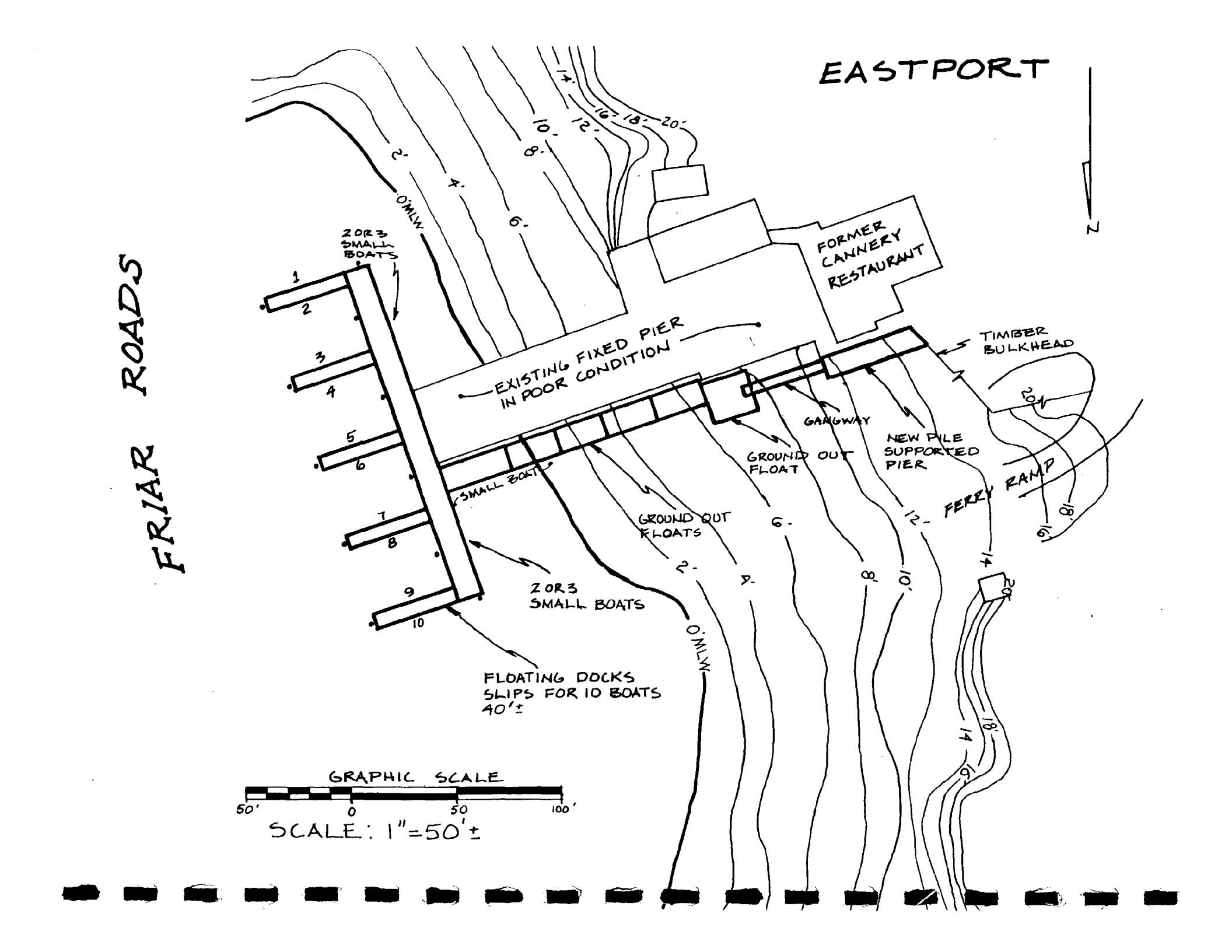


SCALE: 1"=40'
GRAPHIC SCALE

FISH PIER, BREAKWATER
SMALL BOAT BASIN
EASTPORT HARBOR
EASTPORT, MAINE

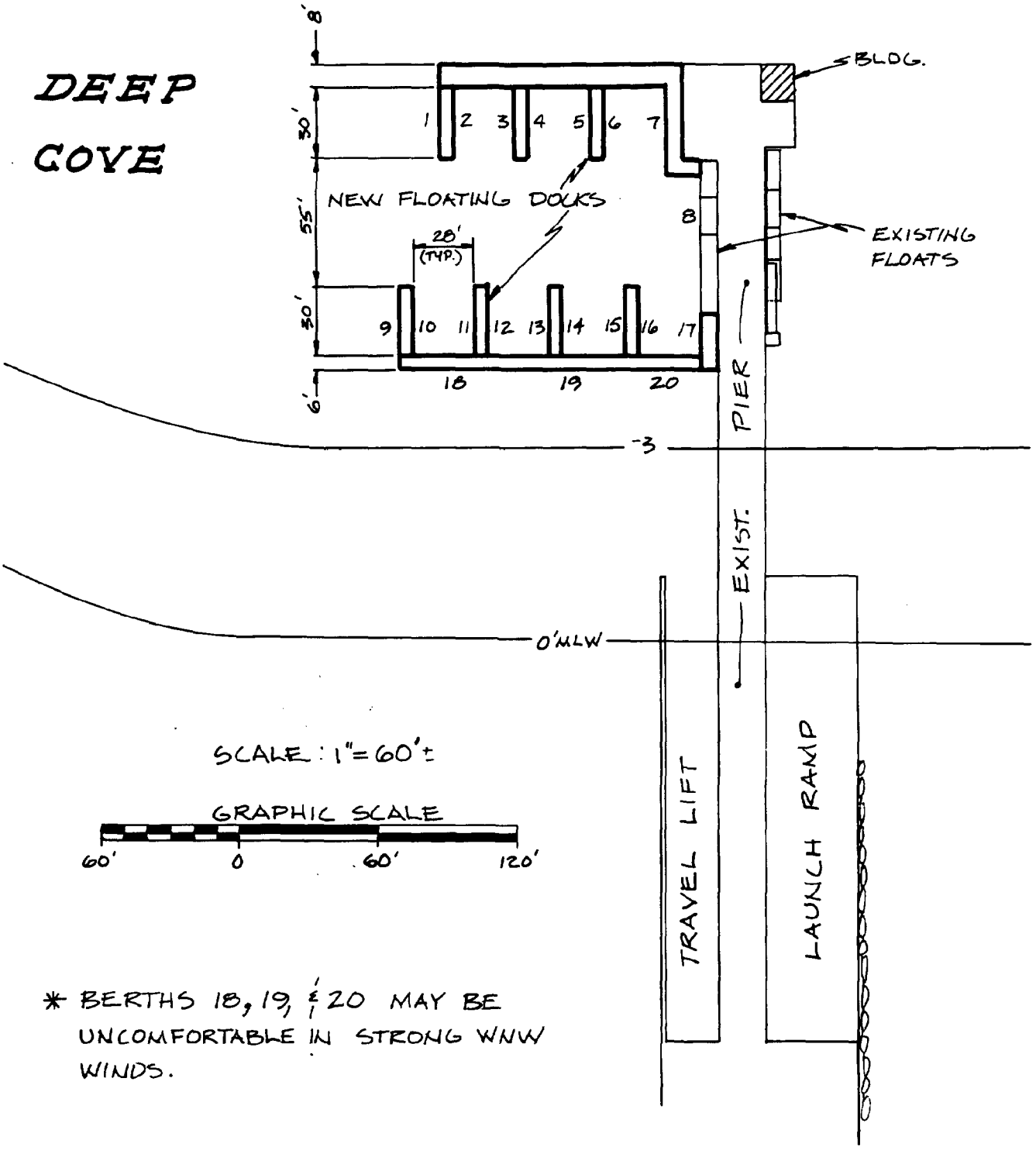
TEC ASSOCIATES
163 Front Street South Portland, Maine 04106

SCALE AS SHOWN	DATE 3/1/91
JOB NO. 9107	DRAWN BY J.D.K.
REV. NO	SHEET NO 1 OF 1


EASTPORT
FRIAR ROADS
N
2'
4'
6'
8'
10'
12'
14'
16'
18'
20'
0' MLW
2 OR 3 SMALL BOATS
1
2
3
4
5
6
7
8
9
10
FORMER CANNERY RESTAURANT
EXISTING FIXED PIER IN POOR CONDITION
TIMBER BULKHEAD
GANGWAY
NEW PILE SUPPORTED PIER
GROUND OUT FLOAT
SMALL BOAT
GROUND OUT FLOATS
FERRY RAMP
2 OR 3 SMALL BOATS
FLOATING DOCKS SLIPS FOR 10 BOATS 40'±
GRAPHIC SCALE
50' 0 50 100'
SCALE: 1"=50'±

N

SCHEMATIC LAYOUT TO PROVIDE UP TO 20* BERTHS FOR BOATS APPROX. 30' L.O.A. AT MARINE TRADES PIER

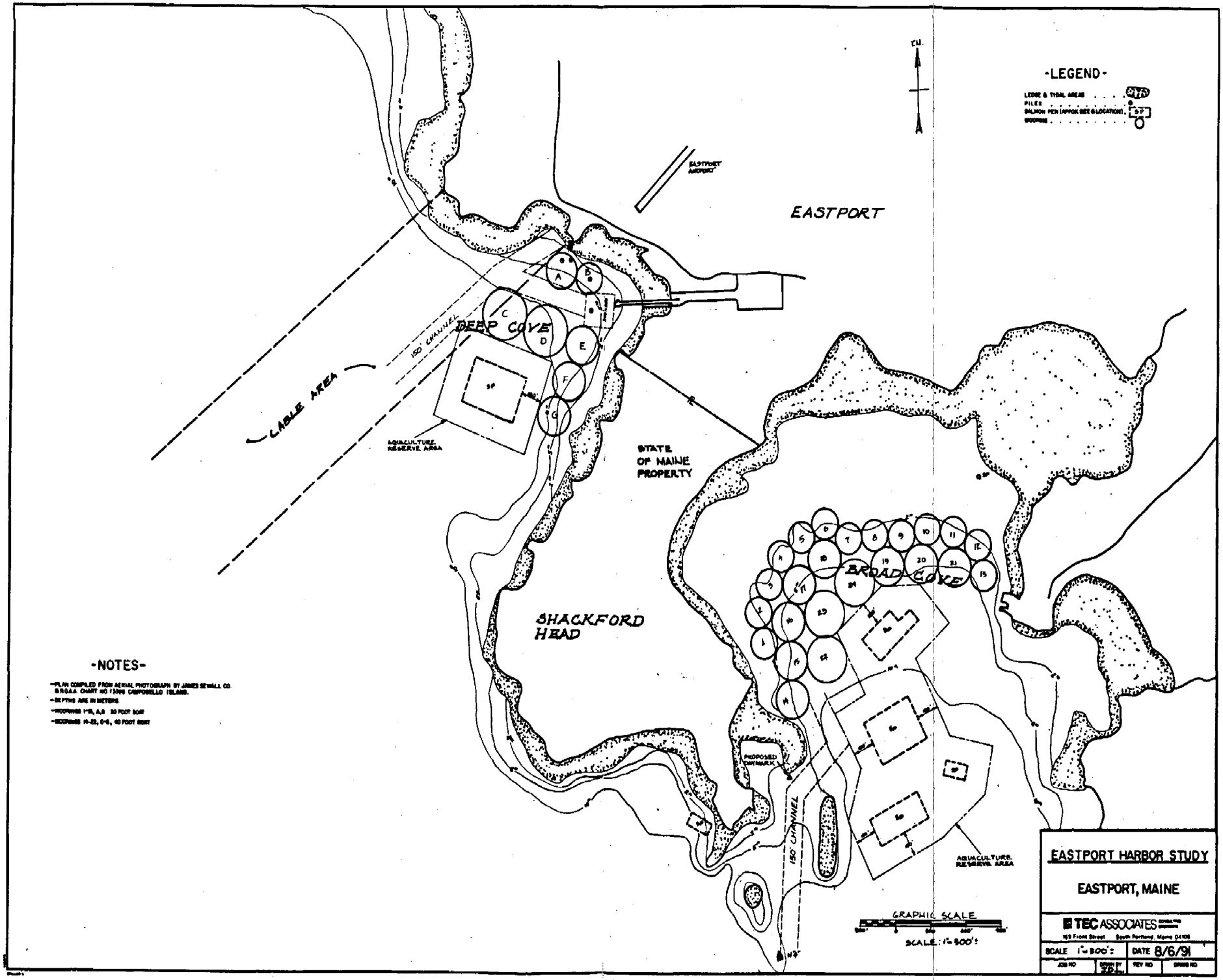


SCALE: 1" = 60'±

GRAPHIC SCALE

60' 0 60' 120'

* BERTHS 18, 19, & 20 MAY BE UNCOMFORTABLE IN STRONG WNW WINDS.


-LEGEND-
LEDGE & TIDAL AREAS
PILES
SALMON PEN (APPROX SIZE & LOCATION)
MOORING
EASTPORT
EASTPORT AIRPORT
DEEP COVE
150' CHANNEL
CABLE AREA
AQUACULTURE RESERVE AREA
STATE OF MAINE PROPERTY
SHACKFORD HEAD
BROAD COVE
PROPOSED DAYMARK
150' CHANNEL
AQUACULTURE RESERVE AREA
GRAPHIC SCALE
SCALE: 1"=800'
-NOTES-
-PLAN COMPILED FROM AERIAL PHOTOGRAPH BY JAMES SEWALL CO.
-DEPTHS ARE IN METERS
EASTPORT HARBOR STUDY
EASTPORT, MAINE
TEC ASSOCIATES
SCALE 1"=800'
DATE 8/6/91

SECTION III

WATERFRONT MANAGEMENT

INTRODUCTION

As uses along Eastport's waterfront continue to expand, existing harbor management will need to be modified to keep up with the growth in activity. The purpose of this section is to explain existing practices, discuss strengths and weaknesses, outline key concerns and suggest options and timetables for addressing issues. Information from this section comes from interviews with the harbor master, members of the Project Oversight Committee and others familiar with Eastport's waterfront; the harbor master's guidebook published by the University of Maine Cooperative Extension Service and examples of harbor management techniques in other ports.

EXISTING HARBOR MANAGEMENT

The Eastport harbor master is a part-time position, reporting to the city manager. Duties focus on administration of the inner basin berthing area of the breakwater. The harbor master is paid $1,200 per year, plus 20% of all fees collected. The balance of fees are earmarked for the Inner Basin/Fish Pier Reserve Account. The account pays for infrastructure improvements. Approximately $12,000 to $15,000 is collected annually. In early 1991 the balance in the account was approximately $24,000. (The City also earmarks approximately $3,000/year in boat excise-tax revenues to the account.)

Duties of the harbor master include:

- administering priorities for use of the berthing spaces at the inner basin and north end of the breakwater;
- collection of fees; Eastport has three types of fees:
  - annual/semi-annual rates for use of the finger piers/fish-pier floats, and for rafting to the breakwater;
  - daily rates for transients; and
  - use of floats on the north side of the breakwater;
- enforcement of rules for berthing;
- enforcement of rules for moorings.

Current activities in harbor management include the development of a more efficient method of billing and fee collection, the replacement of signs explaining the use of the breakwater area and administration of an inner basin dredging project.

WATERFRONT MANAGEMENT ISSUES

Strengths under the current harbor-management system include the harbor master's flexible schedule, which allows him to perform necessary waterfront duties while holding a full-time job elsewhere; the harbor master's rapport with waterfront users, which helps resolve problems as they arise; and the harbor master's efforts to attain as efficient use of the space-constrained inner basin as possible.

Weaknesses within the current system include the inability to have management coverage of the waterfront at all times. This prevents the City from collecting revenue from transients. It has been estimated by the Project Oversight Committee that the potential exists to collect approximately $30,000 in fees, or approximately double the current level of collections. In addition, there is no formal job description or evaluation procedure for the harbor master's position. This leads to misunderstandings regarding performance criteria and expectations about the job. There is also a need to modify the harbor ordinance to reflect the requirements of the U.S. Army Corps of Engineers and State Title 38 M.R.S.A. In addition, the City also has no overall oversight of harbor and waterfront activity.

WATERFRONT MANAGEMENT RECOMMENDATIONS

The City of Eastport has several immediate harbor-management needs. They include:

- *Developing administrative procedures, a job description and an evaluation procedure* for the harbor master's position. This will formalize the position, establish a predictable system for administering the position and form criteria for measuring performance.

- *Updating the harbor ordinance to reflect the requirements of the U.S. Army Corps of Engineers and State Title 38 M.R.S.A.*

The regulation of a harbor is a three-way intersection, where federal, state and municipal authority meet. The fundamental federal concern is to keep waters open to commerce. The U.S. Army Corps of Engineers requires communities to manage waterways in the general public interest, i.e. they must be accessible and open to all. The Corps looks to local harbor-management plans and ordinances to govern this "open-to-all on equal terms" priority. Table III.1 lists the Corps' "10 Commandments" of Harbor Management.

TABLE III.1
U.S. Army Corps of Engineers Harbor Management Plan Criteria

1. Provide for the orderly use, operation, administration, development, and preservation of the harbor by the development of a plan and enactment of enforceable ordinances.
2. Provide for unobstructed navigation (clear channels to and around anchorage areas, mooring areas and waterfront facilities), so that navigable waters can continue to serve as highways of commerce.
3. Provide for the identification of conflicts, problems, and encroachments on Federal projects, and develop a strategy to eliminate existing encroachments and to prevent new ones.
4. Provide for the mooring, anchoring, berthing, launching and retrieving of boats, and provide for public landings and terminals, so that intended benefits are derived.
5. Provide for fair administration of project features and public landings, so they are open to all on equal terms.
6. Consider the environment equal with economic matters, and provide for the conservation of important natural parts of the ecosystem (balance conservation and development — should not stifle commerce or ruin the environment).
7. Provide for public involvement in decision making.
8. Provide a usable guide for regulators in conducting public-interest reviews and be capable of serving as basis for general permit for structures and work regulated by the Corps.
9. Provide a map of the harbor showing areas designated for various uses — channel, moorage anchorage, public access, open-water shellfish or sensitive areas, etc.
10. Provide a mechanism for conflict resolution and local enforcement.

Title 38 of the Maine Revised Statutes Annotated contains the legal basis for the appointment of harbor masters and empowers local regulatory management of harbors. Under Section 1 towns are required to appoint a harbor master if any person who

desires mooring privileges or wishes mooring to be regulated makes the request. The authority and liabilities of the harbor master are those established by municipal regulations and ordinances, as well as state laws. (To carry a gun and have the power to arrest, a harbor master must complete a two-week training course at the Maine Criminal Justice Academy.)

Ordinances differ from community to community, but typically regulations are devised to address the authority of the harbor master, channel designations, definition of terms, mooring sites, mooring allocation policy, enforcement, abandoned watercraft and other areas. (A good resource on harbor management is "Harbor Management: A Legal Guide for Harbor Masters and Coastal Officials," published by the University of Maine Cooperative Extension Service.)

Keeping in mind that the Project Oversight Committee prefers simple and direct solutions to issues, the following revisions are suggested for updating the existing ordinances:

- develop a preamble or introductory section of the ordinance to explain the overall purpose of the ordinance;
- describe the duties and legal authority of the harbor master;
- develop regulations for use of different berthing and mooring locations;
- define terms;
- develop a more specific mooring policy. In particular, a mooring allocation procedure should be developed in accordance with State Title 38 M.R.S.A.

■ *Expanding capabilities with part-time assistance during peak periods.* This would enable further coverage of the waterfront, keep up with fee collections from transients and help collect fees from regular inner-basin users.

In addition, the city should evaluate its overall approach to harbor management. This would involve determining if issues are addressed most efficiently through the existing system of reporting to the City Council or if other approaches are needed. Two other options include:

■ *Form a Harbor Committee.* A harbor committee can be extremely useful in formulating a workable harbor-management ordinance, one which addresses and incorporates community needs and wishes. The local harbor committee will also play a central role in harbor-management planning.

Typically, the harbor committee is made up of five unpaid members appointed by the selectmen or Town Council, with the harbor master serving as a sixth. Committee members tend to be the most knowledgeable "boat people" in the community, and in theory, at least, it is their understanding of the importance of having a good working harbor that makes them willing to serve without pay. They serve as advisors to the selectmen.

Different towns entrust different responsibilities to their harbor commissions. Table III.3 lists examples of harbor committees in four communities.

- *Move harbor management to the Port Authority.* Because of its daily, on-going presence at the breakwater, the Port Authority could establish a harbor master position. The job would be full-time and combined with other tasks such as security and maintenance. The full-time presence would help address the issue of fee collection. The Port Authority would also be able to provide overall administration and tracking of waterfront development activity.

Table III.2 summarizes the harbor management policy options.

TABLE III.2
Management Strategies

ISSUE	POLICY OPTIONS
■ Recordkeeping, billing and collection system for berthing fees ■ The need to establish on-going maintenance and capital improvement program for waterfront facilities ■ The need to generate revenues to fund maintenance and capital improvement program ■ The need to discontinue use of the Breakwater by vessels not in use ■ The need for the harbor master to be more accessible ■ The development of a parking strategy on the Breakwater ■ The need to maintain on-going oversight over waterfront planning and development activities ■ The need to regulate use of different berthing and mooring areas as waterfront activities expand ■ The need to have local harbor management regulations comply with U.S. Army Corps of Engineers guidelines and State law as explained in Title 38 M.R.S.A.	*IMMEDIATE (Now)* ■ Develop administrative procedures, job description and evaluation procedures for harbor master position ■ Create assistant harbor master to assist during seasonal peak periods ■ Update ordinance to reflect State Title 38 and U.S. Army Corps of Engineers *SHORT TERM (1–5 years)* ■ Consider Harbor Committee to provide on-going administration of city waterfront policies and assist harbor master with decision making: – Appeals board for harbor master decisions – Ordinance amendments – Setting fees – Capital improvement planning ■ Consider shifting harbor management to Port Authority ■ Develop short-term/long-term capital improvement plan to ease congestion: – Raise existing fees – Implement fees for activities for which not currently charging – Bonds – Other *LONG TERM (5+ years)* ■ Continue strategies developed for short term ■ Adjust short-term strategies as needed

TABLE III.3
Examples of Harbor Committees

ORGANIZATION	MEMBERSHIP	RESPONSIBILITIES
CAMDEN HARBOR COMMITTEE	• Appointed annually by selectmen • Representative of the varied recreational and commercial interests using harbor	• Advise selectmen about ordinance implementation • Advise selectmen on development proposals • Advise selectmen on problems associated with harbor use • Act as Board of Appeals
FREEPORT COASTAL WATERS COMMITTEE	• Appointed by Town Council • 7 residents, serving staggered terms	• Study and evaluate usage of and access to coastal waters • Advise Town Council on policy matters and proposed regulations • Supervise enforcement of rules and regulations through the harbor master • Oversee maintenance and care of town-owned waterfront facilities through harbor master • Act as Board of Appeals
SCARBOROUGH HARBOR COMMITTEE	• Nominated by Town Manager/appointed by Town Council • Not less than 5 members, nor more than 9 • 2-year terms • Residents representing as many diverse interests as possible (i.e. commercial boat owners, recreational boat owners, abutting land and business owners, members of town boards and committees, etc.) • Town employee as non-voting member if a special skill needed (planning, engineering, recreation, etc.)	• Harbor planning operation and regulation except for duties of harbor master • Advise Town Council on harbor issues, including fees and operational budgets • Act as Board of Appeals
BELFAST HARBOR ADVISORY COMMITTEE	• Appointed by City Council • 5 residents	• Advise city manager and harbor master on custody, care and management of the harbor and its facilities • Act as Board of Appeals
JAMESTOWN (RI) HARBOR MANAGEMENT COMMISSION	• Appointed by Town Council from list of interested parties maintained by town administrator • 10 residents, including a representative from following groups: recreational boating, commercial fishing, commercial mooring operators, environmental interests, Planning Board, Town Council • 3 riparian owners and an interested but unaffiliated party • 3-year staggered terms	• Primarily regulators and management group for the waters of the Town • Responsible for preparing annual budget for approval by Town Council • Oversee management of a harbor account with revenue from fees, fines and rent • Act as Board of Appeals

SECTION IV

WATER QUALITY

INTRODUCTION

Clean coastal waters are of great value to the city of Eastport. The aquaculture industry within the city is completely dependent on maintenance of high water quality; the future well-being of Eastport's recreational boating industry depends in large measure on maintenance of water quality; and land values and further development of the tourism economy along the coast are related to water quality.

According to the Maine Department of Environmental Protection (DEP), water-quality issues are usually related to bacterial pollution, litter, dredging, shoreland construction, excessive nutrient loading and toxic pollution.

Industry and municipal sewage treatment plants discharge nutrients and toxic pollutants. However, non-point source pollution, which includes runoff from roads, parking lots, septic systems, agricultural fields and discharges from boats, can also be a significant source of nutrients and toxic pollutants. An overview of the effect of development on coastal waters is provided in Table IV.1.

A complete analysis of water-quality issues was beyond the scope of this project. However, it is clear that continued attention to the issue is necessary to ensure the economic success of Eastport's marine industries.

The purpose of this chapter is to highlight water quality issues for Eastport, provide an overview of clean water efforts underway as part of other projects and recommend how to implement water-quality efforts in the future.

Information for this section comes from the DEP, Maine's Coastal Program, the City of Eastport Community Development and Planning Department, the Maine Aquaculture Innovation Center, the Connecticut Department of Environmental Protection, water-quality studies from other Maine communities and interviews.

TABLE IV.1
The Effect of Development on Estuarine Ecology

WASTE DISPOSAL

Manufacturing (paper & textile mills, tanneries, etc.): Even when regulated and treated waste streams can include heavy metals (mercury, copper, lead, arsenic...), polynuclear aromatic hydrocarbons (PAHs); dioxin, and organic sludge.

Power Plants: Cooling water from power plants adds heat to estuary waters. Nuclear power plants contribute low levels of radionuclides to the estuarine environment from liquid discharges to estuary waters.

Municipal Sewage: Treatment plants discharge treated wastewater containing bacteria, nutrients, road residues, household toxics, chlorine, heavy metals and other substances, including wastes from commercial businesses tied into the sewage system.

Storm Outfalls: Combined sewer overflows (CSO) and storm drain outfalls add road residues, sediment, bacteria, and trash to estuary waters. If a municipal sewage plant malfunctions or is flooded by storm waters, raw sewage may be discharged into the estuary.

Overboard Discharges: Some residential wastewater is treated with sand filtration and chlorination before disposal into tidal waters as an overboard discharge. Over 3,000 of these overboard discharges remain on the Maine Coast and add bacteria, chlorine, and nutrients to coastal waters. New overboard discharges are forbidden by state law. An unknown number of illegal straight pipes discharge sewage directly into Maine tidewaters.

MARINA & PORT DEVELOPMENT

Dredging and Dredge Spoil Disposal: Dredging to maintain navigational channels or anchorages and disposal of dredge spoils results in redistribution of pollutants in bottom sediments, increased turbidity of estuarine waters and destruction of bottom habitats.

Harbor, Port and Marina Development: Boat traffic may add bacteria, chlorine, and formaldehyde from marine toilets to nearshore waters, as well as marine trash, small oil and fuel spills, and toxic bottom paints and chemicals from boat and ship maintenance activities. Boat traffic can potentially harm submerged aquatic vegetation, introduce foreign plants and animals, and cause noise pollution.

FOOD SOURCE

Traditional Fisheries: A by-product of fishing is the addition of lost traps, nets and other gear as well as trash into nearshore waters. Harvesting techniques such as bottom-dragging disturbs natural estuarine bottom habitats. The repeated digging of mud flats for clams and worms changes the texture of the intertidal mudflat habitat and increases turbidity of tidal waters. Selective harvesting of particular species may change natural cycles of abundance.

Aquaculture: The feeding and raising of fish in aquaculture pens adds nutrients to estuarine waters and may alter the natural ecology under the pens. Introduction of non-native shellfish seed and fish smolt to Maine waters may unintentionally spread foreign species and diseases.

LAND USE

Roads: Road run-off contains polynuclear aromatic hydrocarbons (PAHs), lead, zinc, and oil from automotive traffic as well as nutrients and bacteria from land drainage. Road construction across estuaries or tidal creeks can alter tidal flow, destroy wetland habitats and block passage for migratory fish.

Residential Development: Waterfront residential development often involves shoreline alteration with stabilization measures or dock construction. Lawn and garden fertilizers, pesticides, animal wastes, and nutrients and bacteria from malfunctioning septic systems are all associated with run-off from residential areas. Clearing and paving land for lawns, driveways, parking lots, and roadways increases the rate of flow and volume of land run-off into coastal waters.

Agriculture: Runoff from agricultural lands often contains nutrients from fertilizers or animal manure, pesticides, and eroded topsoil.

Mining: Drainage from mining operations may include heavy metals and eroded soil.

Forestry Practices: Forestry operations involving large clearcuts or the use of skidders on slopes and streams within a coastal watershed may increase erosion of topsoil and the volume of surface water run-off. These practices increase sediment loads and water temperature in freshwater tributaries of estuaries and coastal waters. Timber management with herbicides within the estuary watershed may result in the accumulation of toxic herbicide residues in estuarine waters and sediments.

SOURCE: "The Estuary Book," Maine Coastal Program, 1991

EXISTING CHARACTER OF COASTAL WATERS

Passamaquoddy Bay and Cobscook Bay are considered "estuaries." An estuary is defined as "a semi-enclosed coastal body of water which has free access to the ocean and within which seawater is measurably diluted by fresh water from land drainage." The State of Maine classifies coastal estuarine waters in three categories: SA, SB and SC. These classes are explained in Table IV.2. Most of Eastport's coastal waters are classified as SC, with other areas classified as SA.

TABLE IV.2
Water Quality Classification

Class SA waters are the highest classification. All discharges are prohibited in Class SA waters. Class SA waters have high quality water, unique ecological resources and are often located next to coastal parks or other public lands. The estuarine and marine communities as well as the dissolved oxygen and bacteria content of SA waters must be as naturally occurs.

Class SA waters shall be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish and navigation and as habitat for fish and other estuarine and marine life.

Class SB waters allow discharges which do not cause detrimental changes to the aquatic community, including finfish aquaculture and hydroelectric power generation. Most estuaries in Maine are currently designated SB. Class SB waters must have a dissolved oxygen content at least 85% of saturation and bacteria concentration may not exceed levels recommended for shellfish growing areas. Enterococcus bacteria must not exceed specified levels between May 15th and September 30th.

Class SB waters shall be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish, industrial processing, and cooling water supply, hydroelectric power generation and navigation and as habitat for fish and other estuarine and marine life.

Class SC waters allow heavy industrial discharges as long as the water quality supports the fish and aquatic communities normally found in the area and allows swimming and fishing. The Penobscot Estuary, Portland Harbor, St. Croix Estuary and other industrialized coastal waters are classified as SC. Class SC waters must have an oxygen content of at least 75% of saturation and bacteria concentration may not exceed levels recommended for restricted shellfish growing areas. Enterococcus bacteria must not exceed specified levels recommended for restricted shellfish growing areas. Enterococcus bacteria must not exceed specified levels between May 15th and September 30th.

Class SC waters shall be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and restricted harvesting of shellfish, industrial processing and cooling water supply, hydroelectric power generation and navigation and as habitat for fish and other estuarine and marine life.

SOURCE: Water Classification Program, January 1989. Maine Revised Statutes Annotated Title 38, Article 4-A, Department of Environmental Protection, Bureau of Water Quality Control, Augusta, ME

EXISTING EFFORTS

Two major water-quality efforts are underway. The City of Eastport is installing new sewer lines, which will separate storm water and wastewater. Instead of having untreated sewage discharge into coastal waters at approximately 30 locations, sewage that has undergone primary treatment will discharge at two locations. This $3.1 million project is expected to be completed by 1993.

In addition, a major water-quality study involving salmon farming is underway. In early 1991 the National Marine Fisheries Service awarded the Maine Aquaculture Innovation Center (MAIC) and the University of Maine a $249,732 grant to study the effects of salmon net pens on the marine environment. According to the Innovation Center, the economic viability of salmon net-pen aquaculture in Maine is threatened by the public's perception that this type of aquaculture will endanger the state's coastal marine environment. A sound scientific basis for siting and monitoring regulations is needed to develop effective strategies for preventing possible environmental degradation. The goal of the one-year project is to develop a "predictive model" that industry, regulators, and scientists can use to assess the impact of organic enrichment (detritus from uneaten food and fish feces) on the benthic communities or microorganisms, macrofauna, and megafauna; including commercial species of shellfish and finfish important to the traditional fishermen. The identification of an acceptable management threshold will allow traditional fishermen to continue to operate around salmon pens.

At the conclusion of the project, a workshop will be sponsored by MAIC to disseminate the results to industry members, state and federal regulators, scientists in the state and region, traditional fishermen, and concerned citizens. The project is a collaborative effort between industry (Mariculture Products Limited), University of Maine researchers at the Darling Marine Center, and private laboratory subcontractors (Intertide Corporation and Alden/Ames Company).

FUTURE EFFORTS

It is important to emphasize that the aquaculture industry, as well as other water uses in Eastport are dependent also upon the maintenance of clean water by land activities (point-source and non-point-source runoff, shoreside construction, etc.).

A water-quality study focusing on land-side impacts may be considered for funding by the Maine Office of Comprehensive Planning, the Maine Department of Environmental Protection, the Maine Aquaculture Innovation Center or the Northeastern Regional Aquaculture Center.

Two major types of pollution threaten water quality: point source and nonpoint source. Point sources are the easier of the two to identify because they are direct discharges to waterbodies, mostly by way of pipes. Examples include discharges, usually licensed, from sewage treatment plants and factories. For the past 15 years Maine has made steady progress in cleaning up point source pollution. One dramatic result has been the return of gamefish to several large rivers along which manufacturing and sewage treatment facilities are located.

Nonpoint source (NPS) pollution is more difficult to identify. It does not originate from a specific "point," like a pipe. Instead, it results when human activities contribute pollution in a scattered manner after rain storms. It is often characterized as "runoff" from farms, construction sites, parking lots, and roads. Forestry, mining, and waste disposal activities also contribute to the problem. The principal pollutants contributed by these sources include nutrients, sediment, pesticides, toxic substances, organic enrichment, salts, and petroleum and its byproducts.

Despite the progress in cleaning up point source pollution, degraded water quality persists in a number of Maine's waterbodies as a result of NPS pollution. In Maine, according to the DEP, NPS pollution has caused an estimated 187,000 acres of groundwater acquifers to fail to meet safe drinking water standards and now threatens about 53,000 acres of lakes. Use of several estuaries along Maine's coast, over 1,000 miles of rivers and streams, and 35 lakes and ponds have all been impaired by nonpoint source pollution. On a national level, the U.S. Environmental Protection Agency estimates that a full 60 percent of all pollution sources are nonpoint related. Nonpoint source pollution is now acknowledged to be a major source of water use impairment to Maine surface water and groundwater resources. An NPS pollution assessment report, recently completed by DEP, indicates that nonpoint-related impacts occur in every drainage basin in Maine.

According to DEP, examples of water-quality efforts that citizens can accomplish in their day-to-day lives include:

- *Litter.* Place litter, including cigarette butts and fast-food containers, in trash receptacles. Never throw litter in streets or down storm drains. Recycle as much as possible.

- *Fertilizers.* Fertilizers contain nitrates and phosphates which, in abundance, cause algae blooms that can lead to fish kills. Avoid overuse of fertilizers, and do not apply them before a rainfall.

- *Pesticides.* Many household products made to exterminate pests are also toxic to humans, animals, aquatic organisms, and plants. Follow the label directions carefully. Do not overuse pesticides, and use natural alternatives whenever possible.

- *Household Hazardous Products.* Many common household products (paint thinners, moth balls, and drain and oven cleaners, to name a few) contain toxic ingredients. When improperly used or discarded, these products are a threat to public health and the environment. Do not pour hazardous products down any drain or toilet. Do not discard with regular household trash. Use natural and less toxic alternatives whenever possible. Contact DEP's Bureau of Oil and Hazardous Materials Control at 289-2651 for information on proper disposal.

- *Motor Oil.* Motor oil contains toxic chemicals that are harmful to animals, humans, and fish. Do not dump used motor oil down storm drains or on the ground. Recycle all used motor oil by taking it to a service station or local recycling center.

- *Car Washing.* Like fertilizers, many car detergents contain phosphates. Use non-phosphate detergents.

- *Pet Waste.* Animal wastes contain bacteria and viruses that contaminate shellfish and cause the closing of swimming areas. Pet owners should pick up after their pets with a newspaper or scooper and dispose of the wastes in the garbage or toilet.

- *Septic Systems.* An improperly working septic system can contaminate groundwater and create public health problems. Avoid adding unnecessary grease and solids to septic systems. Inspect septic systems annually, and pump them out at least every 3 to 5 years.

- *Boat Discharges.* Dumping boat sewage introduces disease-causing bacteria and viruses into the water and adds nitrates and phosphates that can trigger algae blooms. Boat owners should always use Marine Sanitation Devices or pump-out facilities at marinas.

There is also a need for "best management practices" to be utilized by boaters and the boating industry. At a minimum boaters should be encouraged to use pump-out facilities. In 1990 the State legislature required coastal marinas, which have the capacity to provide slip space or moorings for 18 or more vessels, which exceed 24 feet in length to either provide or provide by contractual arrangement pump-out facilities by June 1, 1990 to remove sanitary waste from the holding tanks of watercraft. Municipal and quasi-municipal wastewater treatment facilities must now accept sanitary waste from marinas. According to the U.S. Environmental Protection Agency, a limited number of grants are available to coastal communities to install marine pump-out facilities. The grants can be up to $5,000, and recipients are required to provide a minimum 20% match. In addition, the Maine Coastal Program

is administering a grant program for the Shore Stewards Partnership, which provides water-quality information and funding assistance for groups to educate their communities about water quality.

According to the Connecticut Department of Environmental Protection and trade publications, the following procedures will also help boaters and the boating industry address water quality.

- *Dispose of waste engine oils in designated receptacles.* Marinas often provide specific tanks for this purpose. If not available, bring the used oil to a vehicle service station or municipal waste-oil tank. *Very* small quantities of paint-thinner wastes may be disposed of in the waste-oil tank.

- *Collect paint-stripping and sanding wastes.* Paint residue contains metals toxic to aquatic life, and many chemical strippers contain chlorinated solvents that are also very toxic to aquatic organisms. Use tarps or plastic sheets under a boat when sanding or chemically stripping paint. Dispose of solids in a covered dumpster or other solid-waste receptacle for transport to a sanitary landfill. Use a portable vacuum dust-collection system if one is available.

- *Dispose of used engine antifreeze properly.* Ethylene-glycol-based antifreeze is toxic to aquatic life and often contains toxic metals (copper and lead) at high concentrations. This antifreeze should be collected separately from waste oil and disposed of through a waste hauler licensed to handle metal-contaminated wastewaters. If a marina does not collect used antifreeze, take it to a hazardous-materials collection site. Antifreeze advertised as "non-toxic" (usually containing propylene glycol) is often used in the engine raw-water cooling system during winter storage. It can also be used in the internal cooling system of the engine. This antifreeze should also be collected when drained and reused. Although it is less toxic than ethylene glycol, propylene glycol may also be toxic to aquatic life.

- *Store and dispose of engine batteries properly.* Batteries must be stored properly to prevent spillage of battery acid and must be disposed of through a lead recycling company. In addition to being very corrosive, the battery acid becomes highly contaminated with dissolved lead, which is extremely toxic to aquatic life.

- *Wash boats with high-pressure water **only** under most circumstances.* If detergents are absolutely necessary, use mild cleansers sparingly. Borax or TSP (trisodium phosphate) should be used in place of heavy-duty detergents containing ammonia, sodium hypochlorite, chlorinated solvents, petroleum distillates, or lye.

  Remember: Just because the label says "biodegradable" doesn't mean it will not harm the environment. "Biodegradable" means that a product will eventually decay through the action of microorganisms. It does not mean that it is safe to discharge. A "biodegradable" substance may be extremely toxic to aquatic life, may be a strong carcinogen, may lower or deplete oxygen in the receiving water, or may cause a nuisance condition such as increased algae growth.

- *Use of TBT paints.* Shellfish are particularly sensitive to TBT (tributyltin) an antifouling agent. Although illegal for most uses, they are still in the environment. These paints must have a release rate of less than 4.0 micrograms per square centimeter and cannot be used on non-aluminum hulled vessels less than 25 feet in length. Older cans of antifouling paint may violate this regulation. As with other paints, old antifouling paint should be disposed of at a hazardous-materials collection site.

- *Plastic wastes.* Discarded plastics are believed to result in the death of more than one million birds and more than 100,000 marine mammals and sea turtles each year. The Coast Guard recently issued a prohibition on the dumping of plastics, including synthetic fishing nets and other ship-generated garbage at sea. This rule also required U.S. ports and terminals *including recreational marinas* to provide adequate facilities for receiving garbage. While the rule is largely aimed at commercial ships, everyone should properly dispose of all trash to protect wildlife and maintain the aesthetic qualities of our waters.

- *Sanitary wastes.* Coastal waters support shellfisheries and are heavily used for water-contact recreation. Discharge of untreated or poorly treated sanitary wastes from boat's heads presents a potential health risk for shellfish consumers and bathers. Boat owners with holding tanks should dispose of these wastes propertly at a dockside facility. If a pump-out or dump station is not available, encourage the marina or municipality to install such a facility.

Another clean-water effort is being spearheaded by federal regulators. In November 1990 the EPA modified regulations for the National Pollutant Discharge Elmination System (NPDES) (established as part of the Clean Water Act). An NPDES permit is required of industrial facilities that discharge stormwater in the water of the United States. Boat-repair companies are now required to obtain a permit. The Maine Marine Trade Association is working with its membership on this issue.

SECTION V

ENVIRONMENTAL PERMITTING

INTRODUCTION

Environmental considerations are of paramount importance in harbor and waterfront planning efforts. The maintenance of clean water and the protection of marine habitat are vital to the health of Eastport's fishing, aquaculture, boating and tourism industries as well as for the protection of property values.

This section presents an overview of the environmental permitting process. Information comes from the City of Eastport Community Development and Planning Department, the Maine Department of Environmental Protection, the Maine Bureau of Public Lands, the Maine Coastal Program, the U.S. Army Corps of Engineers, the Marine Law Institute, trade publications and sources of information from other states.

GENERAL PROJECTS

INTRODUCTION

All construction, repair and dredge-and-fill activities along Eastport's waterfront, as well as the installation of facilities in the harbor areas, will require permits from local, state and federal sources. The permitting process, whether for public-sector or private-sector projects, should be taken very seriously. In most instances the financing of a project is contingent upon having permits in hand. Also, inattention to permitting requirements results in project delays, thereby increasing the cost of the project. And last, but hardly least, the development of environmental policy is a complex and politically charged process. This often results in many regulatory changes from year to year at different levels of government. Property owners and developers must follow the process in order to keep up with new laws or modifications to existing law that may affect their properties or projects.

A permitting strategy should be developed before embarking on the permitting process. Elements of this strategy may include but not be limited to:

- Review copies of application procedures and guidelines for the permitting agencies at all levels.

- Hold pre-application conferences with the appropriate agencies at all levels. An early meeting with key staff personnel will help clarify requirements, foster early cooperative relations and minimize expenses.

- In many instances technical assistance will be required to meet the requirements of the permit application. It is often desirable to utilize a project manager to coordinate different disciplines of services. This project manager may be someone skilled in overall marine regulation, planning and public-policy development or a development consultant with waterfront permitting experience. Examples of professional services that may be needed on a project include:

  a. soils specialist;
  b. civil and traffic engineering;
  c. geotechnical and hydrogeological engineering;
  d. resource management (wildlife biologist);
  e. water-quality specialist;
  f. architect;
  g. surveyor;
  h. landscape architect/site planner;
  i. lawyer;
  j. other.

The keys to successful permitting are to develop a cooperative relationship with agency staff, understand the requirements of the permit application and design the project accordingly, and stay organized regarding the evolution of the permitting process. Time frames and costs for obtaining permits will vary from project to project. Routine projects are addressed within 6-9 months on the state level and 3 months on the federal level, according to the respective agencies. (An exception is aquaculture permits, which can often take over a year.) Application fees range from $10 to several hundred dollars (the most expensive costs will be incurred in consultant and legal assistance). The key to minimizing costs and keeping projects within the routine time frames is project organization.

CITY OF EASTPORT PERMITTING

On the local level coastal projects require the following approvals:

- a use permit from the Planning Board;
- a flood-plain management permit from the Planning Board;
- approval from the City Council for wharves and weirs; and
- a building permit from the code enforcement officer.

The Planning Board ensures that projects meet the terms of the zoning ordinance, that environmental impacts are minimized and that the applicant is cognizant of the need for other necesssary approvals on the local, state and federal level. The flood-plain management program is a major consideration for pier projects. All permanent buildings seaward of the high-water mark require a variance; the only new, permanent buildings eligible for a waiver are water-dependent-use structures.

The City of Eastport is in the middle of updating its shoreland zoning ordinance with the goal of providing greater protection for its fisheries, aquaculture and marine industries and creating stricter performance standards for all projects.

The Mandatory Shoreland Zoning Act was enacted by the Legislature in 1971. The law, as amended through July 14, 1990, requires municipalities to establish land-use controls for all land areas within 250 feet of ponds and freshwater wetlands that are 10 acres or larger, rivers with watersheds of at least 25 square miles in drainage area, coastal wetlands, and tidal waters, as well as all land areas within 75 feet of certain streams.

The law's intent is (1) to protect water quality, wildlife habitat, wetlands, archaeological sites and historic resources, and commercial fishing and maritime industries; and (2) to conserve shore cover, public access, natural beauty, and open space. It does this through control of building sites, land uses, and placement of structures within the shoreland area.

The Maine Board of Environmental Protection approved a new shoreland zone model ordinance in 1990. Municipalities are required to update their local shoreland ordinance, consistent with the new model ordinances, by December 31, 1991.

STATE PERMITTING

The Bureau of Land Quality Control in the Maine Department of Environmental Protection regulates major developments and activities on the land (including shoreland zone) that will affect the environment. The two pertinent approvals are a Site Location of Development Permit and a Natural Resources Protection Act (NRPA) Permit.

Large coastal projects, such as the proposed cargo pier expansion, may need both approvals; most coastal projects will require just the NRPA permit. The criteria for eligibility under the Site Location of Development Permit include:

- projects including buildings, parking lots, roads, paved areas, wharves or other areas to be stripped or graded and not revegetated that will occupy a total ground area in excess of 3 acres;
- projects including construction, expansion or conversion of a structure that will occupy a ground area totalling 60,000 square feet or contain a total floor area of 100,000 square feet;
- subdivisions involving any offer of sale or lease of five or more lots to the general public within any 5-year period, where such lots, roads and common areas total in excess of 20 acres;
- projects including a gravel or borrow pit to be excavated in excess of 5 acres or expanded by 5 acres since January 1, 1970;
- projects involving a mining activity;
- projects involving a hazardous activity;
- projects occupying a land or water area in excess of 20 acres; and
- projects including the development of multi-unit housing located wholly or in part within a shoreland zone.

The DEP processing checklist for Site Location of Development Applications includes 27 informational categories and 35 informational exhibits. Applicants should meet with DEP staff to go over project requirements.

As explained above, all coastal construction activities are governed by the Natural Resources Protection Act. The law consolidates several laws pertaining to protected natural resources. Among the protected natural resources are coastal wetlands.

A coastal wetland is defined as:

> All tidal and subtidal lands, including all areas below any identifiable debris line left by tidal action; all areas with vegetation present that is tolerant of salt water and occurs primarily in a salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous lowland which is subject to tidal action during the maximum spring tide level as identified in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes (38 M.R.S.A. Sec. 480-B(2).

In a protected area such as a coastal wetland, permits are required for the following activities:

- dredging, bulldozing, removing, or displacing soil, sand, vegetation, or other materials;
- draining or otherwise dewatering;
- filling;
- constructing, repairing, or altering any permanent structure (a permanent structure is one placed or constructed in a fixed location for a period exceeding 7 months of the year).

In order to obtain a permit, the proposed activity must meet eight environmental standards. The proposed activities must not:

- unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses;
- cause unreasonable erosion of soil or sediment, or prevent naturally occurring erosion;
- unreasonably harm any wildlife or aquatic habitat;
- unreasonably interfere with sand supply or movement or increase erosion;
- unreasonably interfere with the natural flow of any surface or subsurface waters;
- lower water quality;
- cause or increase flooding;
- on sand dunes, unreasonably interfere with sand supply or movement or increase erosion;
- cross a river segment identified in the law as "outstanding," unless no other alternative having less adverse impact on the river exists.

NRPA—Wetlands. In 1990 the State of Maine adopted new wetland protection rules as part of the NRPA. These rules should be read in depth before attempting any project. However, a summary of these rules is as follows:

The rules established three classes of wetlands:

- *Class I* wetlands are rated highest in value, due to their biological functions. They provide habitat for threatened or endangered plants, unique natural communities, or significant wildlife habitat. These wetlands receive the greatest protection, and any alteration of them requires the greatest compensation. Coastal wetlands are Class I wetlands.

- *Class II* wetlands are important largely because of their hydrologic functions, such as protection of water quality and control of floodwaters. These are wetlands that include, or are located near, open waterbodies or watercourses.

- *Class III* wetlands are rates lowest in value. They would typically include forested wetlands and wet meadows not located near open water.

Most projects must provide an analysis of alternatives in order to demonstrate that a particular alternative does not exist; certain exceptions are granted for Class I and Class II wetlands. Among them are water-dependent uses. The DEP defines water-dependent uses

as "A use which cannot occur without access to surface water." The DEP emphasizes that examples of uses that are not water dependent include, but are not limited to, boat storage, residential dwellings, hotels, motels, restaurant, parking lots, retail facilities and offices.

NRPA—Permit by Rule. Permit-by-rule (PBR) regulations became effective on February 15, 1989, for certain activities covered under the NRPA. The regulations identify activities taking place in or adjacent to wetlands and waterbodies that should not significantly affect the environment if carried out according to standards contained in the regulations. A person proposing to do work that qualifies for permit by rule is required only to file notice with the DEP.

Permit by rule is intended to save applicants the time and expense of filing a permit application with DEP, while at the same time providing a direction in the form of standards as to how a work activity must be carried out.

The following activities may be eligible for permit by rule:

- disturbance of soil material adjacent to a wetland or waterbody;
- placement of intake pipes and water-monitoring devices;
- maintenance, repair and replacement of structures;
- placement of moorings;
- movement of rocks or vegetation by hand;
- placement of outfall pipes (includes ditches and drain tile);
- placement of riprap;
- construction of crossings (utility lines, pipes and cables);
- construction of stream crossings (bridges, culverts and fords);
- maintenance, repair and minor modification of state transportation facilities.

All projects must meet standards relating to:

- erosion control;
- habitat protection; and
- water quality.

In the coastal environment the PBR approval is commonly used for "maintenance, repair and replacement of structures." It is important to understand DEP's definition of structures:

> Anything built for the support, shelter or enclosure of persons, animals, goods or property of any kind, together with anything constructed or erected with a fixed location on or in the ground. Examples of structures include buildings, utility lines and roads.

This rule allows maintenance, repair or replacement activity to be carried out on a structure subject to the following conditions:

- The structure must have been in active use within the one-year period preceding work.

- A maintained, repaired or replaced structure shall not exceed the dimensions of the previously existing structure, shall not extend any further into the water or wetland, and shall be constructed of similar materials, except that previously existing concrete structures may as an alternative be replaced with rock or timber structures.

- Applicants are required to take photographs of the structure prior to maintenance, repair or replacement work as a record of previous structure and to submit these photographs to the Department of Environmental Protection along with the notification form. A location map of the project site is also required.

- Wetland vegetation shall not be destroyed or permanently removed. If wetland vegetation must be disturbed during the project, it shall be reestablished immediately upon completion of the work and shall be maintained.

- This section shall not apply to:

  1. The placement or replacement of fill below the normal high-water line or upland edge of any coastal wetland, freshwater wetland, great pond, river, stream or brook;
  2. The placement or replacement of retaining walls in or adjacent to coastal wetlands, great ponds, rivers, streams or brooks; or
  3. The placement or replacement of permanent structures in great ponds.

Maine Dept. of Conservation, Bureau of Public Lands, Submerged Land Permit or Easement. Before a DEP NRPA permit can be issued, projects must obtain a lease or easement from the Bureau of Public Lands (BPL). The size and nature of the project will determine whether a lease, which requires annual rental fees, or an easement, which requires only a processing fee, is needed.

The State of Maine defines publicly owned submerged lands in the coastal region (including islands) as "All land from mean low watermark out to the three mile territorial limit. Where intertidal flats are extensive, the shoreward boundary begins 1650 feet seaward from the mean high watermark."

To quality for a lease or easement, the proposed use cannot have adverse impacts upon:

- public access to or over the waters of the state;
- public trust rights: fishing, waterfowl hunting, navigation and recreation.

Structures located on submerged land require a lease or easement when:

- the existing use is being changed;
- the size of an existing structure is being changed; or
- a new structure is being proposed.

Structures that were in place prior to October 1, 1975 were granted constructive easements and do not require a lease. All constructive easements end on September 30, 2005, at which time a new lease or easement will be required. Changing the use or size of a structure removes it from constructive easement status.

Leases or easements are also required for pipelines, utility cables, waterlines, and dredging. Even when an activity does not require a permit, a lease or easement may still be required.

The Bureau will usually not approve leases or easements for filling submerged land or for activities that could take place on the upland such as:

- offices;
- parking space;
- restaurants;
- residences;
- anything that does not need to be on the waterfront.

For fill and upland uses the Bureau may place special conditions upon the terms of a lease. Projects may be required to include:

- public walkways;
- public boatramps;
- navigational improvements;
- publicly accessible space for fishing, sight-seeing, waterfowl hunting, or recreation;
- improvements that benefit fish and wildlife habitat;
- protection of important social, economic, or historical resources.

FEDERAL PERMITTING—U.S. ARMY CORPS OF ENGINEERS

The U.S. Army Corps of Engineers has been regulating activities in the nation's waters since 1890. The jurisdiction of the agency is defined by the following laws:

- *Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401)* authorizes the Corps to regulate the construction of any dam or dike across navigable waters of the United States.

- *Section 10 of the rivers and Harbors Act of 1899 (33 U.S.C. 403)* authorizes the Corps to regulate certain structures or work in or affecting navigable waters of the United States.

- *Section 404 of the Clean Water Act (33 U.S.C. 1344).* Section 301 of this Act authorizes the Corps to regulate the discharge of dredged or fill material into waters of the United States.

- *Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (33 U.S.C. 1413)* authorizes the Corps of Engineers to regulate the transportation of dredged material for the purpose of disposal in the ocean.

- *Section 401 of the Clean Water Act* requires applicants to obtain a certification or waiver from the state water pollution control agency to discharge dredged or fill materials. This agency reviews the effect on water-quality standards.

- *Section 307(c) of the Coastal Zone Management Act of 1972, as amended,* requires applicants to obtain a certification or waiver that the activity complies with the state's coastal zone management program for activities affecting a state's coastal zone.

The Corps issues two types of permits: general and individual.

General Permits. There are two types of general permits: nationwide and regional.

- *Nationwide General Permits* are a series of general permits issued by the Corps' Washington office for minor projects in certain areas.

- *Regional General Permits* apply to certain minor activities authorized by the Corps on a regional or statewide basis. Activities allowed by a regional permit may include docks, piers, and mooring buoys in tidal waters, minor road work by a town or state agency, minor hydro projects, and maintenance dredging with upland disposal.

General permits apply to activities the corps has determined are substantially similar in nature and cause minimal environmental impacts, individually and cumulatively. The Corps does not require a detailed review for these activities; however, written verification of regional permit eligibility is necessary from the Corps for work covered under regional permits, and some nationwide permits require notification to the Corps.

For a general permit the Corps requires the following information:

- brief project description;
- vicinity map;
- site plan;
- detail plan.

Individual Permits. If a project does not fall under the criteria for a general permit, applicants must submit an application for an individual permit. The application form for an individual permit is called "ENG Form 4345, Application for a Department of Army Permit." The decision whether to grant or deny a permit is based, in part, on a public interest review of the probable impact of the proposed activity and its intended use. When a public notice is required, the review takes into consideration all comments received and other relevant factors. Benefits and detriments are balanced by considering effects on items such as:

- conservation
- economics
- aesthetics
- wetlands
- cultural values
- fish & wildlife values
- flood hazards
- floodplain values
- food & fiber production
- energy needs
- navigation
- shore erosion & accretion
- recreation
- water supply & conservation
- water quality
- safety
- needs & welfare of the people
- considerations of private ownership
- general environmental concerns

The Corps will consider the following general criteria in evaluating every application:

- the relative extent of the public and private need for the proposed activity;
- the practicable use of reasonable alternative locations and methods to accomplish the objective of the proposed activity; and
- the extent and permanence of the proposed activity's beneficial and detrimental effects on the public and private uses to which the area is suited.

The Corps evaluates individual permit applications for the discharge of dredged or fill material under the *404(b)(1) guidelines*. These guidelines, prepared by the Environmental Protection Agency in consultation with the Corps, are the Federal environmental regulations for evaluating the filling of waters and wetlands. They are designed to avoid unnecessary filling of waters and wetlands. The guidelines prohibit discharges:

- where less environmentally damaging, practicable alternatives exist;
- which result in violations of State or Federal Water Quality Standards, the Endangered Species Act, and the Marine Sanctuaries Act;
- which cause or contribute to significant degradation of waters and wetlands;
- if all appropriate and practical mitigation has not been taken; or
- if there is not sufficient information to determine compliance with the guidelines.

MOORINGS

The United States Army Corps of Engineers is the primary agency for granting federal approval of moorings. The Corps guidelines include:

- *Individual, Non-Commercial Moorings.* These are moorings placed by a vessel owner for his/her private use. Installation of such moorings are authorized under a Nationwide General Permit if they do not interfere with navigation. Consequently, the local harbor master has approval authority and no application to the Corps Engineers is required.

- *Commercial Moorings.* Commercial mooring buoys that are not for sale or rent are authorized under a Nationwide General Permit by the Corps if they are not located in a Federal channel or anchorage and do not interfere with navigation. Temporary moorings used by marine facilities in their commercial operations fall under this category. A good example is a few moorings used for holding vessels until they are taken out of the water for repairs. Again, no application to the Corps of Engineers is necessary if the local harbor master has approved the activity.

- *Rental Moorings.* The installation of moorings for which any type of fee is charged must be approved by the Corps of Engineers. This includes moorings offered by marinas for transient or seasonal rental and moorings controlled by private yacht clubs — if the annual membership fee includes a club-controlled mooring.

  Applications for rental moorings must be filed with adequate drawings with the Corps of Engineers' regional headquarters in Waltham, Massachusetts. After reviewing the documents, the Corps will issue a public notice soliciting comments on the proposal. Finally, public comments will be considered and a decision will be made whether the proposed activity is in the public interest and a permit will be issued or denied.

  Rental moorings in continuous use since 1968 may be "grandfathered" and should be handled fairly routinely. Operators of any rental moorings placed since then which do not have permits should submit an application as soon as possible to maintain use of the moorings.

Moorings must also meet certain State requirements. The Maine Department of Environmental Protection permits moorings for vessels 65 feet or more. The Maine Bureau of Submerged Lands requires a submerged land lease if commercial vessels are 2,000 square feet or more or if other vessels are 500 square feet or more. The lease cost is explained by formula. A submerged land easement is required if commercial fishing vessels are under 2,000 square feet and moored permanently 17 months or more and under 500 square feet and moved permanently for other types of vessels. The cost of an easement is $25 every five years.

AQUACULTURE

INTRODUCTION

The aquaculture industry in Maine faces one of the most complex systems of environmental regulation in the country, if not the world. According to a matrix developed by the Marine Law Institute for a Maine legislative study committee, approvals are needed from 12 separate agencies on the local, state and federal level for finfish operations. It is no wonder that the costs of permitting for finfish farms can sometimes exceed $100,000. Most of the costs are for legal expenses, according to industry representatives and studies such a 1990 report on the northeastern salmon industry funded by the Northeastern Aquaculture Center.

Prospective fish farmers should organize themselves carefully when proceeding through the regulatory process. The pre-application procedures listed in the introductory section of this chapter should be followed closely. In addition, technical assistance and advice is available from the Maine Aquaculture Innovation Center, the Maine Aquaculture Association, the Maine Coastal Program or the Department of Marine Resources.

CURRENT REGULATORY CLIMATE

As with coastal environmental policy in general, aquaculture regulations are evolving while existing measures are subject to change. Efforts are currently under way between state and federal agencies to prevent unnecessary agency overlaps and to try to provide a credible, one-stop source of permitting information. For example, a lease from the Maine Department of Marine Resources is now mandatory, but the aquaculture submerged-land lease from the State Bureau of Public Lands is waived with the receipt of DMR approval. Also, state and federal agencies are drafting a single set of monitoring requirements to satisfy the needs of six different agencies. At the present time the permitting process involves permits from the following:

- City
- Department of Marine Resources
- Department of Environmental Protection
- Department of Inland Fisheries & Wildlife
- Bureau of Pesticide Control
- State Planning Office
- Army Corps of Engineers
- Environmental Protection Agency
- United States Coast Guard
- U.S. Fish & Wildlife Service
- National Marine Fisheries Service
- Food & Drug Administration

The matrix in Table V.1 provides an overview of the requirements and recent changes in permitting procedure.

TABLE V.1
Government Regulation of Finfish Aquaculture

	Local Govt.	State Agencies						Federal Agencies					
	Local	DMR	DEP	DIF&W	BPL	BPC	SPO	ACOE	EPA	USCG	USFWS	NMFS	FDA
Permits	-Zoning -Mooring	-Leasing -Marine Import -Wholesale Seafood	-Wetlands -Waste Discharge License**	-Freshwater Import -Disease free certification	-Submerged Lands**	-Pesticide Use	-Federal Consistency	-Section 10	-NPDES* -Ocean Dumping	-Aids to Navigation			
Fees/Terms		X	X**					X					
Hearings	X	X	X**					X*	X*				
Site Inspections		X						X	X*				
Siting Criteria	X	X						X		X	X	X	
Water Quality Certification			X						X*				
Use Conflicts	X	X			X**			X		X	X	X	
Environmental Monitoring		X	X	X				X	X*				
Stock Restrictions		X						X					
Disease Control		X		X									
Drugs/Antibiotics			X			X							X
Quality Control		X											
Endangered Species				X							X	X	

KEY: * *Requirements Pending*
** Waived with DMR Aquaculture Lease

Prepared by the Marine Law Institute
August 13, 1991

State Agencies:
- DMR Department of Marine Resources
- DEP Department of Environmental Protection
- DIF&W Department of Inland Fisheries and Wildlife
- BPL Bureau of Public Lands
- BPC Bureau of Pesticide Control
- SPO State Planning Office

Federal Agencies:
- ACOE Army Corps of Engineers
- EPA Environmental Protection Agency
- USCG United States Coast Guard
- USFWS United States Fish and Widlife Service
- NMFS National Marine Fisheries Service
- FDA Food and Drug Administration

SECTION VI

FINANCIAL STRATEGY

INTRODUCTION

Part of the intent of the Eastport Comprehensive Harbor and Waterfront Plan was to devise a financial strategy for facility improvements that would have the least possible impact on the Eastport taxpayer.

Fortunately, there are several acquisition strategies, state funding programs and other financial opportunities available for consideration. The challenge for Eastport to develop the best package of financial and management strategies necessary for acquisition and reuse of the property.

Marine projects are inherently complex. Preparing capital plans for waterfronts involves planning for the long term, a commitment to improving economic relationships in the harbor and creative use of local resources — volunteers, public-private partnerships, special fees, special districts, etc.

Examples of how marine projects in Maine have been financed through the years include:

- Coastal Program Planning Funds
- Waterfront Action Grants
- Community Development Block Grants
- Economic Development Administration Programs
- Maine Municipal Bond Bank
- Municipal Reserve Funds
- Maine Department of Transportation Fish Pier Programs
- Maine Public Boating Facilities Program
- Federal Land & Water Conservation Fund
- U.S. Army Corps of Engineer Programs
- Boat Excise Tax Funds dedicated to water projects
- Harbor User Fees
- Farmers Home Administration Programs
- Joint Ventures (Public/Private)
- Long-term Leases
- Gifts

Not all of these funding opportunities are pertinent to the City of Eastport. However, certain programs deserve consideration.

STATE PROGRAMS

PROPOSED BOND ISSUE FOR COASTAL INFRASTRUCTURE PROJECTS

An Interagency Oversight Committee (including the Maine Department of Transportation, the Office of Comprehensive Planning in the Maine Department of Economic and Community Development, and the Maine State Planning Office) recently completed a planning study of Maine coastal needs. The intent of the study was to identify and establish priorities for marine projects the state should pursue.

The most significant result of the report for Eastport was that 3 Eastport projects were identified as priority projects that should be included in a bond package. The report recommends the award of $500,000 million to extend and repair the breakwater, $100,000 to construct ramps and floats at the Fish Pier and $220,000 to repair fenders and install cathodic protection at the Fish Pier. The projects were among 70 priority projects identified statewide, for a total of $11.7 million. The potential award of State funds is also intended to require a 20 percent local match. The local matching funds can come from a variety of sources.

The bond issue is currently on hold because of the State of Maine's budget problems. The Ports and Marine Transportation Division of MDOT reports that it is uncertain when the bond issue will move forward. However, the program is the division's top funding priority for the early 1990's and remains a part of MDOT's Transportation Investment Program Strategy for the biennial period 1992-1993, which began July 1, 1991.

PROPOSED MAINE PORTS BOND ISSUE

The proposed $20 million expansion and relocation of the Port of Eastport to Estes Head will require State bond assistance. An initial $200,000 appropriation for Eastport is part of a proposed port bond issue as part of the MDOT's Transportation Investment Program for 1992-93. However, like the proposed bond issue for coastal infrastructure projects, the port bond program is on hold because of statewide economic issues.

COASTAL MANAGEMENT GRANT PROGRAM

To assist coastal municipalities with implementation of the coastal elements of its comprehensive plan, the Maine Office of Comprehensive Planning has established a federally funded coastal management grant program. Like the State-funded implementation grant program, funds are available only if a local comprehensive plan has been determined to be consistent with the Act. Cost sharing for the coastal management grant program will be on an equal basis (50% federal/50% local share). The following parameters have been established for the administration of this program:

Eligible Applicants. All *coastal* municipalities that have submitted a comprehensive plan for review by the Office are eligible to apply for a coastal implementation grant. Although grant applications will be accepted and processed prior to local adoption of a plan, no payment will be made prior to the local adoption of a consistent plan.

Maximum Grant Amount. The maximum federal share available to each applicant is $5,000. The required local match will be 50% of the total project cost. Thus, for example, a $5,000 federal grant would be matched with $5,000 of local funds for a total project cost of $10,000.

In Eastport this program could be used to evaluate and update harbor management procedures as outlined in Section II or could be used toward water-quality analysis.

LAND AND WATER CONSERVATION FUND

The Land & Water Conservation Fund (LWCF) is a federal grant-in-aid program that provides up to 50% reimbursement for the acquisition and/or development of public outdoor recreation facilities.

All applications are made through the Office of Comprehensive Planning's Community Parks & Recreation Division. This division, upon request, will perform a preapplication site inspection and provide assistance in the preparation of the application.

Reimbursement is based on the fair-market value as determined by an appraisal or the purchase price, whichever is less. Incidental costs such as legal fees, surveys, appraisals, etc. are not allowable. Costs of construction of a facility are allowable. Administration costs, certain types of buildings, and the purchase of operational or maintenance equipment are not allowed.

MAINE'S PUBLIC BOATING FACILITIES PROGRAM

This program provides public facilities for boats in the waters of the State, including but not limited to launching ramps, parking sites and access roads. The State Bureau of Parks and Recreation is authorized to provide grants-in-aid to municipalities and private organizations such as Fish and Game clubs, to assist in the acquisition, development or improvement of public boat facilities as well as to acquire and develop State-owned sites. This fund finances about 12 new sites a year statewide.

About 1% of the State tax on gasoline is credited to the Boating Facilities Fund. Monies from this fund may be used in combination with Federal Land and Water Conservation Fund and/or local monies to acquire land and develop public facilities for boats.

Public-boat-facility development in the $10,000 range is generally funded with State Boating Facilities Fund money plus local monies and/or in-kind assistance.

Federal funding is considered for more costly sites. The amount of Federal and/or State funding recommended for a project is generally higher for a site that serves a regional area. The Bureau emphasizes assistance to municipalities and others willing to acquire, improve, and develop locally owned, operated and maintained facilities.

MUNICIPAL PROGRAMS

CAPITAL IMPROVEMENT PROGRAM (CIP)

A CIP is basically a long-term timetable used by government to indicate the timing and level of municipal services that it intends to provide over a specified duration to specified areas. Generally, the capital program covers a five- to ten-year period. This is a way of planning for the cost of waterfront improvements over a multi-year time period.

REVENUES FROM MARINE ACTIVITIES

Eastport currently receives approximately $15,000 annually in berthing fees. Currently the money is used for projects such as maintenance and repair at the inner basin.

MAINE MUNICIPAL BOND BANK

The bond bank pools loan applications from any Maine town, county, school system, special district or other governmental unit. By pooling financing needs, participating governmental units save money in the form of lower interest rates and broader distribution of processing costs, thus reducing overall long-term capital borrowing costs. The bond bank seeks interest rates below market rates.

PRIVATE

Sometimes a property owner can obtain tax benefits by donating an interest in a parcel of land to a town, land trust or some type of land holding organization. Similar tax benefits are also allowed for various easements, covenants, deed restrictions, conditional transfers or sales of property below the market price.

In the vast majority of situations, the taxpayer cannot expect a maximum return. However, the ultimate impact of such arrangements on one's taxes comes after a careful analysis of a taxpayer's total financial and tax position.

The City of Eastport may wish to work with the Eastport Land Conservation Trust regarding negotiations with property owners, who may be interested in an arrangement other than a fair-market sale. This may help create additional access opportunities.

NON-PROFIT

The Maine Aquaculture Innovative Center and the Northeastern Regional Aquaculture Center each provide grants for aquaculture-related projects. Because water quality is such a strong concern for Eastport's aquaculture industry, these agencies should be approached regarding potential water-quality projects. For example, there is a need to address the impact of point and non-point runoff on the city's coastal waters, and the development of boat management practices for shoreline development and commercial/industrial use.

APPENDIX A

INVENTORY OF ACTIVITIES AFFECTING EASTPORT'S WATERFRONT

APPENDIX A

TABLE OF CONTENTS

- *City of Eastport*
- *State of Maine*
- *Port Authority*
- *Private Sector*
- *Canadian Issues*

APPENDIX A

INVENTORY OF ACTIVITIES AFFECTING EASTPORT WATERFRONT

CITY OF EASTPORT

- **EXPANSION OF AIRPORT**

  Timeframe: Possibly 1991
  Cost/funding sources: $850K-$1M; 95% FAA/5% local
  Impact:
  - Eliminates through traffic by Marine Trades Center (MTC)
  - Increases use of land near MTC
  - Possible commercial airport use?

- **INSTALL SEWER LINES**

  Timeframe: 1991-1993
  Cost/funding sources: $2.4M–EPA/FHA/DEP; $775,000–CDBG
  Impact:
  - Improves water quality of harbor
  - Construction interruptions

- **INSTALL FLOAT SYSTEM AT NORTH END OF BREAKWATER**

  Timeframe: Spring/Summer 1991
  Cost/funding sources: Waterfront Act Grant (state)/Local (Inner Basin dedicated account) – $30,000
  Impact:
  - Reduce berthing pressure of inner basin
  - Provide additional berthing capacity
  - Focal point for transients
  - Create more parking demand

- **DREDGING OF INNER BASIN**

  Timeframe: Spring 1991
  Cost/funding sources: Inner Basin dedicated account – $15,000
  Impact:
  - Improve access to inner floats at low tide

STATE OF MAINE

MDOT

- **BREAKWATER EXTENSION AND REPAIR**

  Timeframe: Variable
  Cost/funding sources: $3.6 million (up to $500K state, requires 20% local match)
  Impact:
  - Creates expanded berthing area with float/ramps to ease marine congestion

- **EASTPORT FISH PIER FLOAT SYSTEM**

  Timeframe: Variable
  Cost/funding sources: $100,000 (state bond issue, with 20% local match required)
  Impact:
  - Construction of ramps/floats for commercial fishermen; allow marine access to central business district

- **MUNICIPAL FISH PIER REPAIR AND IMPROVEMENT**

  Timeframe: Variable
  Cost/funding sources: $220,000 (state bond issue, with 20% match required)
  Impact:
  - Repair fenders, new vessel access and install cathodic protection

DEPT. OF CONSERVATION

- **SHACKFORD HEAD — TRAILS AND VISITORS' CENTER**

  Timeframe: Spring 1991 for parking lot and toilets
  Cost/funding sources: $560K state
  Impact:
  - Increase use of land near MTC
  - Attract more visitors to Eastport

TECHNICAL COLLEGE SYSTEM

- **WCTC MARINE TRADES CENTER MASTER PLAN**

  Timeframe: Current
  Impact:
  - Possible increased use
  - Contamination removal issue

PORT AUTHORITY

HOLMES PLANT

Evaluating future use

Timeframe: On-going
Impact:

- May contribute to creation of second basin

PORT DEVELOPMENT FEASIBILITY STUDY

Timeframe: Completed — supports expansion
Cost/funding sources: $20M
Impact:

- Increase in cargo activity
- Increase in marine-related jobs
- Second loading location required

PRIVATE SECTOR

MAINE PRIDE SALMON

- **WHARF RENOVATION AT SEA STREET**

  Timeframe: Completed Spring 1991
  Cost/funding sources: $250-$300K
  Impact:
  - Keeps aquaculture use in central business district

CONNORS BROS.

- **DEVELOPING FEED BUSINESS, EXPANDING PROCESSING, NEW BOAT RAMP AT PLANT**

  Timeframe: Unknown
  Impact:
  - May reduce use of breakwater as feed-loading area
  - May add 100 jobs

SEA VIEW CAMPGROUND

- **EXPANSION**

  Timeframe: 1992-1993
  Cost/funding sources: Private financing
  Impact:
  - Increase recreational/tourist accommodations by adding motel and restaurant

- **WASS FACTORY** (between Federal Marine and Terminal)

  Timeframe: Uncertain at present
  Cost/funding sources: Private
  Impact:
  - Potential increase recreational boating/lodging near Breakwater

PASSAMAQUODDY TOWING

May develop commercial pier

MCNAUGHTON BROS.

May develop recreational boat facility

MULLEN

- ADDITION OF UP TO 10 TOURIST CABINS IN SEAVIEW AREA OF CITY.

COASTAL PLANTATIONS

- RECEIVED PERMIT TO DEVELOP NORICULTURE SITE

CANADIAN ISSUES

FUNDY ISLES MARINE PARK

Timeframe: Not developed fully
Cost/funding sources: Canadian Government
Impact:

- Tremendous tourist impact

7% GOODS AND SERVICES TAX

Timeframe: Present
Cost/funding sources: N/A
Impact:

- More transient boaters will shop in Eastport
- More retail trade from Canadians
- Possible warehousing opportunities

APPENDIX B

WATER-DEPENDENT BUSINESSES

APPENDIX B

WATER-DEPENDENT BUSINESSES

Atlantic Salmon (Maine) Inc.
Connors Bros., Inc.
East Coast Fish Farms
Eastport Port Authority
Eastport Boatyard & Supply
Federal Marine Terminals, Inc.
Maine Pride Salmon, Inc.
Maine Coast Nordic Enterprises
Maine Salmon, Inc.
Moose Island Marine
Nellie B. Fisheries, Inc.
New England Fish Farming Enterprises
New England Salmon Co.
North Atlantic Aquaculture, Inc.
Northeast Marine and Fuel Depot
Northeast Longshoremen's Association
Passamaquoddy Towing Services, Inc.
Quoddy Pilots Association
Sea Farm Lubec, Inc.
Sea Run Partnership (Inc.)
Senorita Fisheries, Inc.
Treat's Island Fisheries
Washington County Technical College
Marine Trades Center

APPENDIX C

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APPENDIX C

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APPENDIX D

OUTLINE FOR STIMULATING PRIVATE INVESTMENT

ISSUES	POLICY OPTIONS
• Declining public dollars	**IMMEDIATE (NOW)** • Develop harbor management policies that support diversified marine use of the waterfront
• Necessity of creating employment opportunities	• Provide development guidebook for waterfront projects – Structural/locational issues – Environmental permitting guidelines – Guidelines on marine waste management – Financial assistance programs/strategies – Market issues – Zoning issues
• Empty downtown store fronts	• Continue marketing program by Port Authority and Chamber of Commerce
• Marine character as Eastport's "competitive advantage"	• Continue development of zoning regulations that support maritime activities
• Projected growth in shipping, aquaculture, recreational boating	**SHORT TERM (1–5 YEARS)** • Ensure predictability in environmental permitting • Ensure continued access to water at key locations (Central Business District, Deep Cove, Estes Head, Todd Head and areas currently used by aquaculture industry) • Ensure that development does not compromise water quality • Begin implementing capital improvement program
	LONG TERM (5+ YEARS) • Continue support of Marine Trades Center programs and Master Plan • Maintain Eastport's interest in legislative issues affecting marine economy: – State aquaculture policy – State vocational education policy – State port infrastructure policy – State submerged lands policy