NH Work Task 89.5.2.3

Cochecho River Harbor Management Plan

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Prepared for:

New Hampshire Port Authority
555 Market Street
Portsmouth, New Hampshire 03801

Prepared by:

IEP, Inc.
39 Bow Street
P.O. Box 1136
New Hampshire 03802-1136
(603) 433-5800

and

Cambridge Systematics, Inc.
American Twine Office Park
222 Third Street
Cambridge, Massachusetts 02142
(617) 354-0167

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SECTION I

Introduction

Section I
Introduction

Riverfronts have often been left to decline once they outlived their usefulness as transportation routes or sources of power for manufacturing industries. Recently, however, interest in riverfront redevelopment has been rekindled nation-wide. According to a recent Planning Advisory Service Memo,

> Increased demand for downtown office space and central city housing, especially near natural amenities like rivers and lakes, interest in revitalizing and expanding downtown retailing, and increased demand for recreation and recreation facilities have made urban riverfront development more attractive economically. At the same time, efforts to improve water quality and a decline in industrial activity have led to cleaner rivers that are aesthetically attractive sites for downtown expansion.

The City of Dover has renewed its commitment to utilizing the full potential of its river resources. The City, an integral part of the southern New Hampshire seacoast, experienced rapid population growth during the 1980s. Boating traffic has increased in recent years as well. According to one report, boating traffic in Great Bay increased by approximately 35 percent in 1987, with similar growth anticipated for 1988. This pattern of growth provides an opportunity to redevelop waterfront resources for residential, commercial, and water dependent uses and more fully utilize the Cochecho's recreational potential. However, this pattern of population growth and increased boating traffic will also place greater pressures on this resource, creating the potential for congestion and safety problems.

In an effort to address these and other issues, the N. H. Port Authority and the N.H. Office of State Planning contracted with IEP, Inc. and Cambridge Systematics, Inc. to prepare a harbor management plan for the Cochecho River. The planning process began with a kickoff meeting and harbor/river tour with local officials and interested citizens. The Cochecho River Harbor Management Plan study area includes the tidal portion of the river, from the mouth of the Cochecho to the dam

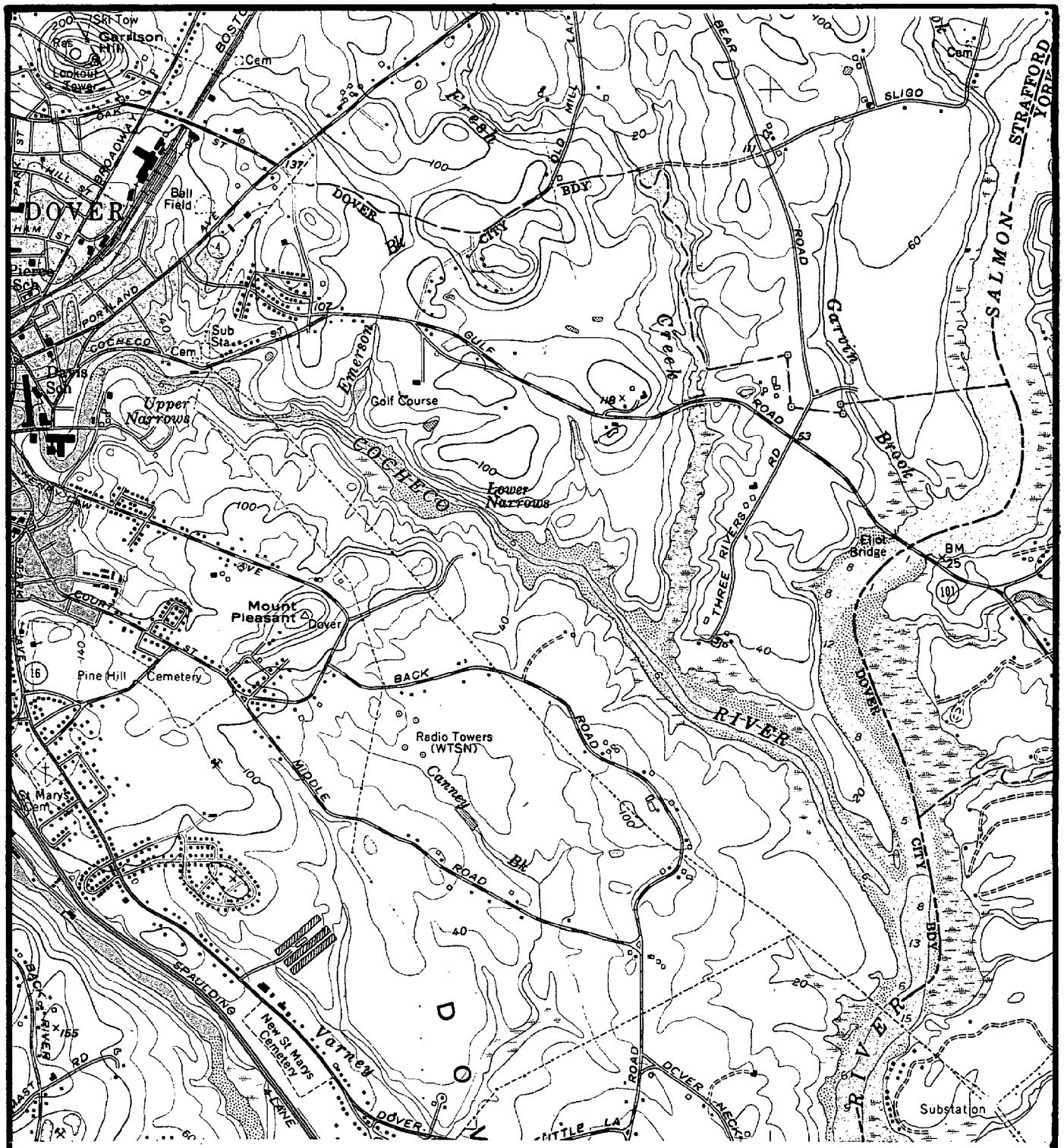
in downtown Dover, and the shoreland areas adjacent to the banks of the tidal Cochecho (see **Map 1**).

The Cochecho River Harbor Management Plan is intended to address the rapidly expanding recreational use of the river and provide for the City's potential waterfront redevelopment while respecting the critical natural and marine environments. In addition, the plan is intended to address the need for a uniform navigational aid system, provide recommendations for maximizing and enhancing the N.H. Port Authority's present harbor management revenue sources, and assess submerged tidal lands leasing policies. Further, the objectives of the plan are to provide:

- solutions that address the specific conditions, issues, and opportunities inherent to the tidal Cochecho River; and

- "model" recommendations for water use activities in other New Hampshire coastal waters.

Section II of the plan, Issues/Goals Statement, discusses key issues raised during the planning process as well as goals and objectives developed to guide future activities along the tidal Cochecho. The Harbor Management and Waterfront Plan, which includes detailed recommendations and implementation strategies, is contained in Section III. Strategies for maximizing revenue sources in order to implement harbor management recommendations, are detailed in Section IV. Section V, Situation Analysis, provides a detailed inventory and analysis of existing and future land and water uses and natural resources along the tidal Cochecho. In addition, it describes local growth and development trends and existing and potential public infrastructure. Section VI, Uniform Aids to Navigation, addresses the need for a uniform navigational aid system for New Hampshire's major tidal rivers. Finally, Section VII provides an overview of issues and implications regarding the leasing of submerged tidal lands.



Map 1
Cochecho River Study Area

Scale
1" = 2,000'

Source:
U.S. Geological Survey topographic map, Dover East, NH Quadrangle.

Cochecho River Harbor Management Plan

Cambridge Systematics, Inc.
222 Third Street
Cambridge, Massachusetts 02142

IEP inc
P.O. Box 1136
39 Bow Street
Portsmouth, NH
03802-1136

SECTION II

Issues/Goals Statement

Section II
Issues/Goals Statement

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Section II
Issues/Goals Statement

Water Use

Key Issues

- The majority of existing recreational boating traffic on the tidal Cochecho River originates from George's Marina near downtown Dover.

- The Cochecho River is currently underutilized and, with dredging, could accommodate additional boat slips and moorings.

- There is an opportunity for dock and pier development at the lower end of the Cochecho near its confluence with the Salmon Falls River.

- Population growth, increased public access, improved water quality, and expanded marina and other recreational facilities, are likely to increase recreational boating traffic on the tidal Cochecho River in the years ahead.

- Concern exists regarding hazards to navigation such as a number of PSNH overhead power cables that cross the Cochecho River.

- Erosion of the banks of the Cochecho caused by boat wakes and speed is of concern, particularly in the area north of the Cochecho Country Club.

- The need exists for a uniform navigational aid system on the tidal Cochecho River.

Goals and Objectives

Goal: Improve navigation on the tidal Cochecho while maintaining or improving environmental quality.

Objective: Remove hazards to navigation.

Objective: Provide adequate maintenance and management services to support increased recreational use of the tidal Cochecho River.

Objective: Develop funding sources in order to adequately support future harbor maintenance and management services.

Objective: Develop regulatory and non-regulatory strategies to minimize environmental damage and manage water use on the tidal Cochecho River.

Resource Protection

Key Issues

- An abundance of natural and scenic resources are located along the tidal Cochecho.

- Protection of critical resources is a priority, especially tidal wetlands, steep slopes, and the areas adjacent to Fresh Creek (see maps 5, 6, and 7).

Goals and Objectives

Goal: Conserve and protect the natural resources of the Cochecho River; maintain the scenic beauty and character of the tidal Cochecho River and harbor even in areas where development occurs.

Objective: Protect and enhance critical resources, including:

- significant fish, shellfish, and wildlife habitat areas;
- areas containing rare and endangered species;
- tidal wetlands; and
- steep slopes.

Objective: Encourage only those uses of environmentally sensitive areas that can be accommodated without negatively impacting the Cochecho River.

Water Quality

Key Issues

- A number of pollutant sources impact the water quality of the Cochecho River including a variety of non-point pollutant sources such as stormwater runoff and overboard discharges from pleasure boats and a number of point sources such as the Sewage Treatment Plant.

- The Cochecho River is rated a Class B waterway according to state regulations.

- Shellfish beds within the tidal Cochecho River are officially closed by the State to shellfishing because the river does not meet state water quality standards.

Goals and Objectives

Goal: Protect and enhance the water quality of the Cochecho River in order to meet, or where appropriate exceed, state water quality standards.

Objective: Restore and maintain the quality of the Cochecho River to allow for a diversity of public and private uses.

Objective: Protect and enhance water quality through sound land use practices and infrastructure improvements.

Objective: Require construction practices which minimize runoff, soil erosion, and sedimentation.

Objective: Minimize overboard discharges from pleasure boats.

Waterfront Redevelopment

Key Issues

- Over the past two decades, Dover has pursued a coordinated long-term effort to redevelop and revitalize its Central Business District.

- Currently, Dover is interested in redeveloping and revitalizing the Cochecho River waterfront adjacent to the Pacific Mills in the City's downtown area.

- The 1984 *Pacific Mills Master Plan* recommends implementation strategies for the redevelopment of the Cochecho River waterfront as well as the re-use of the City-owned land currently occupied by the Sewage Treatment Plant, including:

    - marina/commercial development
    - riverfront park
    - residential and mixed use development
    - parking improvements
    - street reconstruction

- Infrastructure improvements, such as the widening of Cochecho Street, will attract more use of the River.

Goals and Objectives

Goal: Build on and maintain an awareness of Dover's historic role as a port town and enable the development of its most underutilized asset -- the Cochecho River and its ocean access.

Objective: Promote the maintenance, development, and revitalization of the Cochecho River waterfront for passive recreation and mixed uses.

Objective: More fully utilize the Cochecho River's significant waterfront development potential, recreational opportunities, and historic features.

Objective: Utilize key parcels of City-owned land to optimize open space, recreation, and water access with a private development scheme.

Open Space, Public Access, and Recreation

Key Issues

- City-wide, Dover is projected to experience continued population and housing growth.

- As the City's population grows, the need for additional open space, passive recreation, and public access (for example, hiking trails and boat accesses), will increase.

- As more accessible areas are developed, pressure to develop land along the scenic Cochecho will increase.

- Future residential development along the undeveloped banks of the tidal Cochecho will impact water-based and land-based activities:

    - acquisition of land or easements will become more expensive and difficult
    - wildlife habitat may be lost
    - scenic views may be negatively impacted
    - new construction may increase erosion and sedimentation

- Most of the properties along the undeveloped portions of the Cochecho are privately owned and of large acreage and frontage, creating an excellent opportunity for the implementation of an easement program.

Goals and Objectives

Goal: Actively promote public access to the tidal Cochecho River while protecting the quality of the natural resources and the rights of private property owners.

Objective: Expand the opportunities for passive recreation along the tidal Cochecho River.

Objective: Provide appropriate public access to the Cochecho River based upon the type of use the particular area can support.

Objective: Protect and enhance selected open space and scenic areas through regulatory and non-regulatory mechanisms.

Objective: Integrate the Cochecho River's historic features with future redevelopment strategies.

SECTION III

Harbor Management and Waterfront Plan

Section III
Harbor Management and Waterfront Plan

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Section III
Harbor Management and Waterfront Plan

Introduction

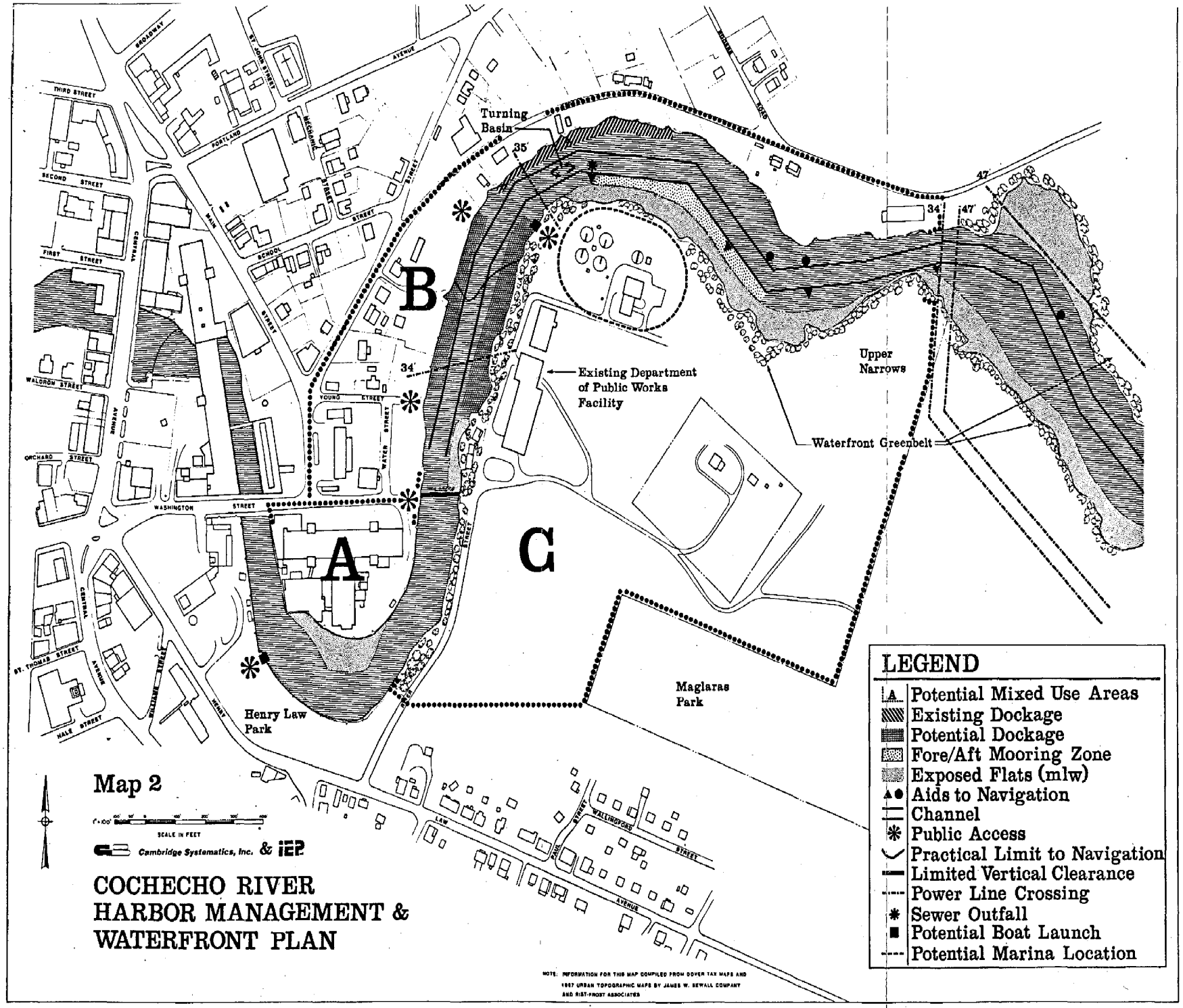
Section III, the Harbor Management and Waterfront Plan, provides specific recommendations designed to implement the goals and objectives presented in Section II, the Issues/Goals Statement. The recommendations presented below, many of which are depicted on **Map 2**, build upon the issues raised during the Cochecho River planning process and the information contained in Section V, the Situation Analysis. Further, this section incorporates some recommendations developed as part of the City's 1988 *Master Plan,* 1989 *Land Acquisition and Protection Study,* and 1984 *Pacific Mills Master Plan.* Past recommendations and new recommendations are assimilated here to ensure an integrated approach to waterfront redevelopment and harbor management.

Plan implementation will involve a mix of public sector and private sector initiatives, many of which will build upon other redevelopment and public access efforts. Implementation efforts should focus on using public dollars as well as regulatory and non-regulatory strategies to leverage private investment in the Cochecho River waterfront. The Cochecho Waterfront Task Force, recently created by the City, has the opportunity to play an important role in this process. Further, the implementation of certain key recommendations should catalyze both public and private sector initiatives. For example, well designed public amenities along a waterfront such as walkways, boat ramps, and parks not only provide a recreational and open space resource, but contribute to the marketability of commercial and residential property.

Recommendations are presented for the following areas:

- Navigation and Water Use
- Harbor Administration
- Resource Protection
- City-Owned Land
- Public Access/Cochecho River – Downtown Dover Linkage
- Waterfront Redevelopment

While the recommendations are presented in this format for purposes of clarity, the implementation of many recommendations is closely related.


Turning Basin
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B
A
C
Existing Department of Public Works Facility
Upper Narrows
Waterfront Greenbelt
Maglaras Park
Henry Law Park
THIRD STREET
SECOND STREET
FIRST STREET
WALDRON STREET
ORCHARD STREET
WASHINGTON STREET
YOUNG STREET
ST. THOMAS STREET
HALE STREET
BROADWAY
PORTLAND
SCHOOL
WATER STREET
CENTRAL AVENUE
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HENRY
LAW
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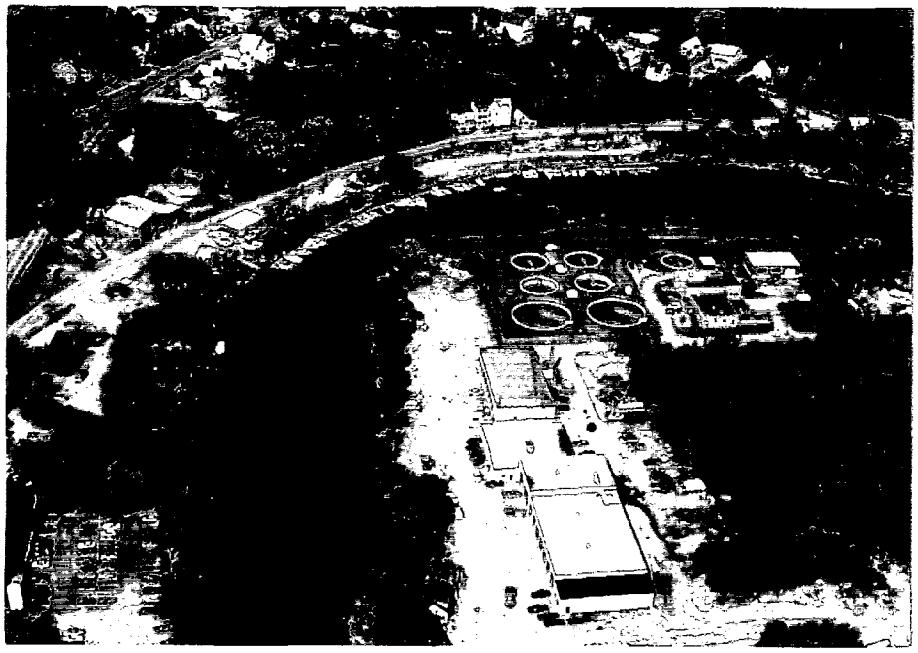
Potential Marina Location
Map 2
SCALE IN FEET
Cambridge Systematics, Inc. & IEP
COCHECHO RIVER
HARBOR MANAGEMENT &
WATERFRONT PLAN
NOTE: INFORMATION FOR THIS MAP COMPILED FROM DOVER TAX MAPS AND
1987 URBAN TOPOGRAPHIC MAPS BY JAMES W. SEWALL COMPANY
AND RIST-FROST ASSOCIATES

Navigation and Water Use

Introduction

There is no official plan for the waters of the Cochecho River which allocates areas for different water uses such as: navigational channels; mooring areas; anchorage areas; swimming areas; or special use areas. While the placement of waterfront structures and moorings is not currently a problem, failure to plan for these activities could result in inappropriate and haphazard development along the riverfront. This could lead to unsafe conditions for anchorage, mooring, and general vessel movement on the river. Furthermore, increased public access and improved water quality as well as the expansion of marina and other recreational facilities related to waterfront redevelopment, are likely to increase recreational use and boating traffic on the tidal Cochecho in the years ahead.

Figure 1



George's Marina on the north bank of the Cochecho River.

Thus, there is a need to provide clear guidelines for present and future development and uses of the river. The recommendations described below, and depicted on **Map 2**, provide a framework for safe and efficient future water use on the tidal Cochecho.

Recommendations

Recommendation #1: Channel

The City of Dover should maintain, to a depth of 6 feet Mean Low Water (MLW), the 60 foot wide navigation channel through the upper portions of the Cochecho River as shown on **Map 2**.

Recommendation #2: Turning Basin

The City of Dover should maintain a turning basin, to the depth of 6 feet Mean Low Water (MLW), to be located in the upper portion of the Cochecho River as shown on **Map 2**.

Issue: Dredging

Through a general permit from the Army Corps of Engineers (in effect through January 1, 1993) the City has the authority to conduct maintenance dredging of the Cochecho River. During 1984/1985 the City of Dover carried out such a dredging project in the vicinity of the sewer treatment plant outfall and the adjacent silted-in channel. In the future, new dredging of the upper Cochecho would be required in order to accommodate some of the recommendations made in the Cochecho River Harbor Management Plan. A description of these new dredge need areas are noted below.

Recommendation #3: Dredging

In order to carry out several of the recommendations it would be necessary to provide new dredging of the following portions of the Cochecho River:

- In order to improve water access to the upper reaches of the tidal Cochecho, dredge those portions of the channel of the Cochecho River which run adjacent to the existing Department of Public Works facility from the existing sewer outfall to a point above the existing limit to navigation approximate with Young Street.

- Dredge either the eastern or western reaches (not both) of the upper Cochecho to accommodate new dockage in order to provide a control depth of 6 feet at Mean Low Water (MLW) (see Potential Dockage areas shown on **Map 2**).

- Excavate and dredge upland areas adjacent to the south side of the river (at the site of the existing sewerage treatment plant) in order to create a new mooring/marina basin on the City-owned lands (See Potential Marina Location shown on **Map 2**).

- Conduct periodic maintenance dredging of the upper Cochecho, as required to maintain a six foot control depth at mean low water (MLW).

Issue: Dockage

The only boat tie-ups available on the tidal Cochecho River are found at three small private docks, and at George's Marina, the river's only commercial marina facility (located on the north bank of the upper Cochecho near downtown). George's Marina maintains approximately sixty slip spaces, most of which are used by small (<25') shallow draft power vessels.

Relatively few vessels are berthed on the River. This is due, in part, to land ownership patterns and historically low levels of recreational boating use on the River. Perhaps more importantly, most of the land adjacent to the river has physiographic conditions (steep slopes, wetlands, and/or rocky shores) which severely limit access between the water and the shoreline to support boat slips and necessary upland facilities. However, in the upper reaches of the tidal Cochecho near downtown, conditions are favorable for additional boat slips.

Recommendation #4: Dockage

The City of Dover should establish two locations along the upper tidal Cochecho where additional vessel slips could be accommodated (see Potential Dockage areas depicted on **Map 2**). While it is physically possible to develop slips on both sides of the River, such development would strain both the natural resources in the area, as well as the limits of safe navigation. Therefore, while both areas should be considered potential slip locations, only one of these areas should be developed.

Issue: Mooring Areas

While there are currently only five privately maintained moorings within the limits of the tidal Cochecho (there are no public moorings), there are water areas with high potential for accommodating moorings.

Recommendation #5: Mooring Areas

The City of Dover should consider applying to the New Hampshire Port Authority for permission to create a public mooring area in the upper portion of the Cochecho River opposite George's Marina (see Fore/Aft Mooring Zone area on **Map 2**). This potential mooring area could accommodate between six and fifteen vessels, depending on size and mooring arrangement. The City in turn could lease moorings for seasonal use, and have a location for transient boaters to tie up.

The New Hampshire Port Authority should maintain control and authority over the placement of all moorings within the designated mooring areas through permits issued by the Authority.

Issue: Type of Moorings

While several alternative mooring configurations are possible, the type used is dependent upon a variety of factors. In most cases, the decisive factors are cost and efficient use of water surface. There is an inverse relationship between cost and efficiency – the least expensive mooring type (single swing moorings) provides the least efficient use of water surface, while more expensive types of multiple mooring systems provide for a more efficient use of space.

Fore and aft moorings have individually anchored floats arranged in a linear manner. Boats are strung out along these lines with their bows and sterns tied up to floats. This method allows greater efficiency by not allowing the boats to swing, therefore less water surface is required. The major drawback to fore and aft moorings is the load placed on the mooring with strong beam wind or wave action. Under these conditions, it is possible for the boats to "drag" their moorings. This type of mooring works best in a protected harbor (such as behind a breakwater) or in a riverine situation as found on the Cochecho. Fore and aft moorings typically work best with smaller, shallow draft vessels.

Recommendation #6: Type of Moorings

The New Hampshire Port Authority should give careful consideration when determining the appropriate type of mooring configuration to be used, as this will affect the number of boats that will fit into the mooring area. The limited amount of water surface is a significant factor on the Cochecho, therefore, the most efficient mooring type possible should be used. While single swing moorings are the most traditional type of mooring used, fore and aft moorings would be the most suitable for this area. Some maintenance dredging will be required to maintain these moorings.

Issue: Dry Moorings

In addition to "wet" moorings, additional future vessel capacity can be accommodated through "dry" moorings. Dry moorings, or "dry stack storage" requires the removal of boats from the water with a mechanical lift and storage on land, usually in a covered warehouse-type building. The practice is different from "winter" storage (where boats are simply stored during the winter or for long periods of non-use) in that the boats are placed in the water "on demand" by the boat owner and are retrieved for storage at the end of the use period. This practice is becoming increasingly popular in communities that have limited water surface available for wet slips/moorings.

Recommendation #7: Dry Moorings

The City of Dover should consider the option of utilizing a dry mooring facility on the City-owned lands adjacent to the river. Such a facility could be developed through new construction or rehabilitation of the existing Department of Public Works facility. However, engineering studies should be undertaken regarding the specific suitability of these structures to support the uses described.

Issue: Marine Safety – Powerlines

Six overhead power cables, with a minimum clearance of 34 feet, cross the Cochecho River near downtown Dover – one near the Department of Public Works facility (34 feet), one near George's Marina (35 feet) (note, this line was recently raised to a reported 50 feet), two at the Upper Narrows (34 foot and 47 foot clearance), and two just east of Upper Narrows (34 foot and 65 foot clearance) (see Power Line Crossings on **Map 2**).

Some of these crossings pose a potentially serious risk to marine navigation, particularly with high-masted sailing vessels. A recent accident with one of the powerlines caused serious harm to a vessel and its passengers.

Recommendation #8: Marine Safety – Powerlines

The City of Dover should work with Public Service of New Hampshire to reduce navigation dangers posed by powerline crossings. This may involve a combination of approaches including:

- the consolidation of multiple low elevation powerlines at a single crossing such as the Washington Street pipebridge; and

- elevation of powerlines to a minimum of 40 feet (actual vertical clearance) and the addition of fluorescent markings to make them more visible to boaters.

Harbor Administration

Recommendations

Issue: Local Rules and Regulations

There are no local rules or regulations governing the use of Dover's waters. Issues including boating safety, the implementation of the Cochecho River Harbor Management Plan, proposed new docks and mooring areas and other issues may create a need for a comprehensive set of regulations for the safe, orderly, and efficient use of Dover's waters.

> Recommendation #9: Local Rules and Regulations
>
> The City of Dover and the New Hampshire Port Authority should continue to work cooperatively to address harbor management issues. These efforts should include the adoption and enforcement of a comprehensive set of land-side and water-side rules and regulations to govern the use and enjoyment of Dover's tidal waters.

Issue: State Rules and Regulations

New Hampshire's harbors and tidal waters are subject to the recently amended *Rules and Regulations Pertaining to Harbors and Tidal Waters of the State of New Hampshire* (NH RSA 271-A), published by the New Hampshire Port Authority.

Recommendation #10: State Rules and Regulations

Review of the recently amended *Rules and Regulations Pertaining to Harbors and Tidal Waters of the State of New Hampshire* (NH RSA 271-A) indicates that the following additional revisions may be warranted:

- Review the mooring specifications, particularly the mooring block weights.

- Include a section on Alternative Mooring Configurations, which would allow the Harbormaster to permit alternative mooring configurations in addition to "single-swing" moorings. This section should also reference standards for "fore & aft" moorings, "gang" moorings and "star-dock" type moorings.

- Amend NH RSA 271-A:8 to allow Harbormasters to act as agents of the N.H. Port Authority in order to collect mooring fees and other types of fees.

- Include a provision which makes operators of vessels clearly responsible not only for their vessel speed but for their wakes, as wakes often cause greater harm than vessel speed.

- Regulate Hover Craft, particularly in or near wetlands and other environmentally sensitive areas.

- Regulate Jet Skis in designated, environmentally sensitive areas.

City-Owned Land

Introduction

The Sewage Treatment Plant and the Department of Public Works facility, which currently occupy the City-owned land on the Cochecho's south bank near downtown, will be relocated by 1992. This creates prospects for alternative future land uses of this key waterfront parcel and an opportunity to more fully utilize the Cochecho River resource by increasing public access.

Figure 2

The Sewage Treatment Plant and the Department of Public Works Facility, located on the Cochecho's south bank, will soon be relocated.

This parcel's proximity to downtown Dover enables the creation of public access opportunities and facilities to be combined with a mixed use waterfront development strategy. Dover's 1988 Master Plan indicates that the future use of large parcels of City-owned land along the Cochecho are "... an ideal location to optimize open space, recreation, and water access, with a private development scheme." According to the Master Plan,

> "Dover has a strong opportunity to attract an appealing mix of shops, offices, and residential units along its downtown Cochecho waterfront. The land currently occupied by its public works garage and by the soon to be abandoned sewerage treatment plant affords a unique opportunity to craft an inviting mix of marina, retail, office, and residential space."

Many of the recommendations presented below were made previously in the 1984 *Pacific Mills Master Plan*. They are incorporated here as they support and enhance the overall Cochecho River Harbor Management Plan.

Recommendations

Issue: Master/Site Plan for City-Owned Land

There is no Master/Site Plan for the key waterfront City-owned property occupied by the Sewerage Treatment Plant and the Department of Public Works facility. An important objective of the master/site planning process should be to create visual and physical access to the river.

This objective could be achieved through development of:

- a Riverfront Park; and
- a Boat Launch Facility

Private sector involvement would support development of the following uses:

- Transient Dockage (for both small craft and large vessels such as cruise boats);
- an Inner Harbor and Marina Facility; and
- Mixed Use Development.

Recommendation #11: Master/Site Plan Kit for the City-Owned Land

The City of Dover should develop a Master/Site Plan for the City-owned property currently occupied by the Sewerage Treatment Plant and the Department of Public Works facility. Use the Master/Site Plan to prepare a developer's kit and solicit proposals for development of the property. Through the use of a Request for Proposal (RFP) in the competitive bidding process, the City can set requirements for access and encourage a wide range of quality design projects from prospective developers. New York City's Department of Ports and Terminals, for example, has used the RFP process very effectively by requiring that development proposals for publicly owned waterfront lands include provisions for public access to the waterfront.

Implementation of the Master/Site Plan should be a public-private partnership. While the City should consider selling or leasing a portion of the property for private development, the land's full value and potential for providing public access should be of the highest priority. For example, regardless of private sector site development initiatives, the City should ensure that a greenbelt is maintained along the river. Thus, the City should include stipulations, as part of the land exchange, as to the amount and nature of public amenities to be provided along the waterfront and design criteria to guide the project.

Issue: Mixed Use Development/Inner Harbor and Marina Facility

Interest in redeveloping riverfronts for commercial and residential uses has been rekindled nation-wide. Improved water quality, the demand for housing as well as office and retail space located near downtown centers, and the desire to locate near waterfronts, has dramatically increased the viability of downtown riverfront development.

Like many communities throughout the country, the City of Dover has renewed its commitment to utilizing the full potential of its river resources. Further, the City's pattern of rapid population growth provides an opportunity to redevelop waterfront resources for residential, commercial, and water dependent uses.

Recommendation #12: Mixed Use Development

The City of Dover should encourage the private development of a mix of office, retail, and residential uses on the City-owned land currently occupied by the Sewerage Treatment Plant and Department of Public Works facility (see Area C on **Map 2**).

Recommendation #13: Inner Harbor and Marina Facility

The City of Dover should consider the potential for the private development of a portion of the City-owned lands as an inner harbor and marina facility (after careful consideration of opportunities for providing public access). This facility could be located on the site of the existing sewage treatment plant which will be excavated as part of the closure and removal process (See Potential Marina Location on **Map 2**).

Issue: Rezoning of City-Owned Land

The area currently occupied by the Department of Public Works facility and the Sewage Treatment Facility is zoned Industrial (I-2). Industrial uses as well as a number of commercial and community/public uses are allowed in this district by right. Marinas and new residential uses are not currently allowed in this district.

Recommendation #14: Rezoning of City-Owned Land

The City of Dover should re-zone City-owned land from Industrial (I-2) to Cochecho Waterfront District to allow for marina and mixed use (residential and commercial) development.

Issue: Riverfront Park

Dover's population grew 16.6 percent between 1980 and 1988. The City's population is projected to increase 21.6 percent, to 31,718 people by 1995. Additional parks and recreational facilities will be required to keep pace with this growth.

The City-owned land on the banks of the Cochecho, located in close proximity to Dover's population center, is an ideal location for the development of a riverfront park. Because of the property's location, it links Dover's urban core and Henry Law Park, with Maglaras Park and the scenic, undeveloped banks of the Cochecho to the east.

Recommendation #15: Riverfront Park

The City of Dover should develop a riverfront park on the City-owned property currently occupied by the Sewerage Treatment Plant and the Department of Public Works facility (see Area C on **Map 2**).

Issue: Boat Launch Facilities

There are no municipal boating facilities on the tidal Cochecho. In fact, George's Marina, located on Cochecho Street on the north bank of the river, provides the only direct boating access to the tidal Cochecho (see Potential Boat Launch on Map 2).

The closest public boat access, to be completed in Spring 1990, is located on the Salmon Falls River at Eliot Bridge in South Berwick, Maine. This ramp will provide small motor boats and hand powered craft with access to the Salmon Falls River, north of the river's confluence with the Cochecho.

Recommendation #16: Boat Launch Facilities

The City of Dover should construct a municipal boat launch on the City-owned land currently supporting the Dover Sewerage Treatment Plant and Department of Public Works facilities.

Issue: Transient Boater Facilities

Currently, the only opportunity for transient boaters to access the City of Dover from the Cochecho is via George's Marina. The City does not maintain any public launch or boat tie-up facility.

Recommendation #17: Transient Boater Facilities

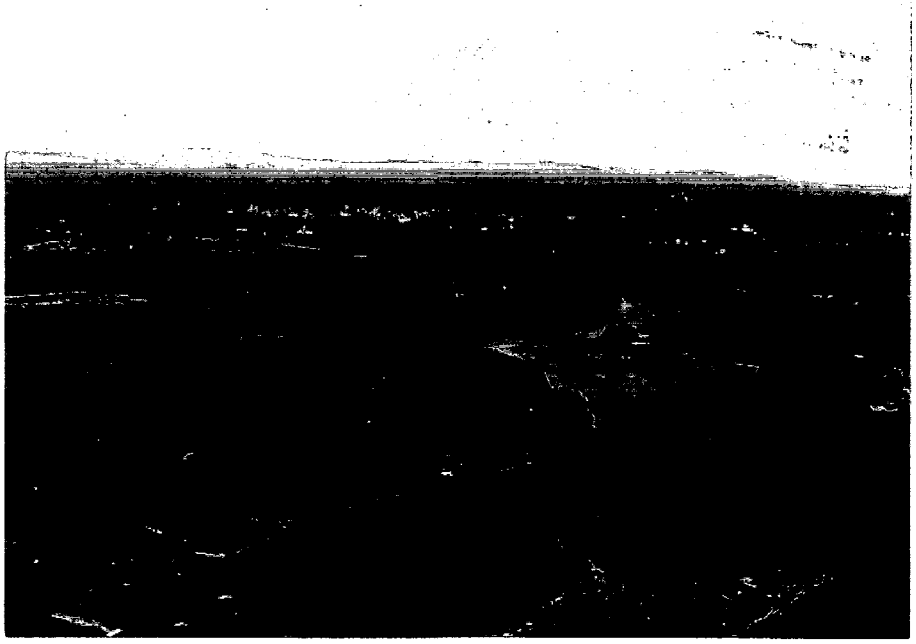
The City of Dover should provide facilities for transient boaters through the private redevelopment of the City-owned lands by requiring developers to allocate a specified number of slips or moorings for transient use (see Recommendation #21).

Public Access/Cochecho River – Downtown Dover Linkage

Introduction

Most of Dover's waterfront along the Cochecho is held in private ownership by owners who do not allow public access to their land. Additionally, none of the large tracts of public open space lands, such as Maglaras Park, Henry Law Park, the Department of Public Works facility, or the Sewage Treatment Plant provide any direct access (other than limited visual access) to the river. Henry Law Park provides visual rather than physical access, and although Maglaras Park has river frontage, formal direct access to the river is not currently possible.

Figure 3



Looking west along the scenic, undeveloped banks of the Cochecho River towards the City of Dover.

Therefore, the City of Dover should seek, through public action and support of private measures, to increase the amount and types of public access to the river for recreational purposes. In addition to benefiting recreational and public access objectives, developing linkages between downtown Dover and the Cochecho will draw waterfront recreational users to downtown's commercial opportunities. The recommendations described below provide the concrete steps to achieve these goals.

Recommendations

Issue: Washington Street Bridge

A "pipebridge" crosses over the Cochecho River between the City-owned land and the end of Washington Street. This bridge represents a potential pedestrian access between downtown and the City-owned land. Since the pipebridge may have been engineered to support only the weight of the pipe itself, the City engineers will need to reassess whether this is feasible. Alternatively, the City could completely reconstruct the bridge in order to provide both pedestrian and vehicular access to the City-owned land.

Recommendation #18: Washington Street Bridge

The City of Dover should construct a new Washington Street Bridge over the Cochecho River in the vicinity of the current pipebridge in order to provide direct linkage between the southern side of the river and downtown for pedestrians and vehicular traffic. Pedestrian access could be provided in an early phase, followed later by construction of a vehicular access bridge. The bridge could be constructed in a manner to allow fishing access to the river at this point.

Recommendation #19: Ownership

The City of Dover should maintain ownership of public street ends which extend to the river such as Washington Street and Young Street. Ownership should not be relinquished without first assessing the lands full value and potential for providing public access opportunities (see Public Access on **Map 2**).

Issue: Hand-Powered Craft Launch

In addition to the small and large power boats and sailcraft found on the River, many small hand-powered craft such as canoes, kayaks, and rowing boats use both the upstream and tidal portions of the Cochecho.

Recommendation #20: Hand-Powered Craft Launch

The City of Dover should establish a hand-powered craft put-in/take-out located at the head of the tidal portion of the Cochecho. Because of the waterfalls over the dams in the downtown mills, the most practical location for such a facility would be at the City-owned Henry Law Park (see Potential Boat Launch on **Map 2**). This facility should include a small float and signage noting where to access the upper reaches of the Cochecho.

Such a facility would not only provide direct access to the tidal Cochecho for small hand-powered craft, but would act as a portage location establishing a connection between the tidal and upstream waters of the river. The upstream linkage could be provided via a parcel owned by the City on the south side of the river adjacent to the Central Avenue Bridge (see Potential Boat Launch on **Map 2**).

Issue: Transient Boaters

Currently, transient boaters (including tour boats from Portsmouth) entering the City of Dover from the water side, are provided little or no information about the many amenities and activities to be found in the City. Generally speaking, these visitors do not frequent the Dover commercial area and are unaware of the amenities Dover offers.

Recommendation #21: Transient Boaters

Develop an informational handout which would link Dover's existing and proposed marinas with the City's downtown area by assisting boaters and visitors in discovering the many opportunities available in the City. This effort could be undertaken by the Chamber of Commerce (see Recommendation #17) or through future New Hampshire Port Authority publications.

Issue: Downtown Waterfront Greenbelt

Pedestrian links between downtown Dover and Henry Law Park, and the City-owned land and Maglaras Park, do not exist. Action is needed to link these and other existing and potential recreational opportunities along the Cochecho River.

Recommendation #22: Downtown Waterfront Greenbelt

The City of Dover should establish a waterfront greenbelt to connect downtown's population center with riverfront recreational opportunities and facilities such as Henry Law and Maglaras Parks as well as the riverfront park proposed for the City-owned land (see Waterfront Greenbelt on **Map 2**).

Recommendation #23: Historic Walking Trail

The City of Dover should establish an historic walking trail around downtown and the waterfront areas, building on past efforts such as the Dover Heritage Walks. The walk could include major historical features as well as significant local historical events. The format for the historic walking trail could consist of a written guide and map directing interested persons along the tour and/or a series of permanent signs and historic plaques at key locations.

Recommendation #24: Public Awareness

Sponsor an event such as a "Canoe the Cochecho/Hike the Cochecho Day" in order to increase public awareness of the Cochecho's recreational opportunities and facilities. This effort could be undertaken by the Strafford River's Conservancy.

Issue: Waterfront Greenbelt/Easement Program

Most of the Cochecho River to the east of downtown Dover is rural, scenic, and relatively undeveloped. The majority of properties within this area are large, privately owned tracts, creating an excellent opportunity for the implementation of an easement program. Through its 1989 *Open Space and Acquisition Plan*, the City of Dover identified parcels in this area by tax map/lot number and ownership for protection under an easement program. In total, the parcels identified represent 6.4 miles of river frontage. The plan proposed a 200 foot set-back depth for the easement program (see Section V, Situation Analysis, for a list of these properties).

The waterfront greenbelt would connect downtown Dover's population center and existing and proposed recreational facilities, with the scenic, undeveloped portion of the Cochecho. This would enable the City to more fully utilize the Cochecho's recreational potential.

Recommendation #25: Waterfront Greenbelt/Easement Program

- Acquire 200 foot easements, through purchase and donation, along Emerson Brook and both banks of the Cochecho River located east of downtown Dover (see Section V, Situation Analysis, for a list of properties).

- Establish a Greenbelt/Hiking Trail on the south side of the Cochecho River from downtown Dover to the Cochecho's confluence with the Salmon Falls River.

- Establish a Greenbelt/Hiking Trail on the north side of the Cochecho River from Fresh Creek to the Cochecho's confluence with the Salmon Falls River.

- Establish a Greenbelt/Hiking Trail on the east and west sides of Fresh Creek from the City line south to the Cochecho River.

Issue: New Developments and Conservation Easements

The City obtained a 250 foot conservation easement along the Cochecho as part of a recently approved 146-lot subdivision within the rural portion of the Cochecho River study area west of McKone Lane. However, the City was unsuccessful in obtaining an easement on a recently approved 9-lot subdivision located directly across the river.

Recommendation #26: New Developments and Conservation Easements

The City of Dover should make every effort to obtain conservation easements as part of the development approval process for waterfront lots on the Cochecho River.

Issue: Regulatory Approaches to Creating Public Access

Some communities establish river corridor overlay districts. Through such districts, specific development standards can be applied to shoreland areas. For example, the Green River Corridor Special Interest District in Kent, Washington governs development within the first 200 feet of the ordinary high water line of the river. Specific development standards include the following:

> "No building or lot within the District shall be constructed or created without providing access to the Green River via public sidewalks or a private trail system."

Additional performance standards specify landscaping and vegetative buffer requirements within the corridor as well as for preventing and mitigating adverse impacts on fish and wildlife resources and enhancing wildlife habitat.

Similar to Dover's Cochecho Waterfront District, the Town of Plymouth, Massachusetts has established a separate waterfront district that places particular emphasis on providing pedestrian access to and along the waterfront:

> "All uses, premises and structures should be designed to allow pedestrian access to and along the shore for a minimum distance of ten feet inland from the mean high water mark."

Recommendation #27: River Corridor Overlay Zoning

The City of Dover should establish a Cochecho River overlay district which specifies requirements such as public sidewalks/trails as well as landscaping and vegetative buffers as a mechanism to enhance public access and protect scenic and natural resources in the river corridor.

Recommendation #28: Cochecho Waterfront District – Public Access

The City of Dover should require pedestrian or visual access as a basic condition for all uses within the Cochecho Waterfront District as one mechanism to implement the City's public access objectives.

Resource Protection

Introduction

The Cochecho River is part of the Great Bay estuarine system. The river and its shoreland areas support a variety of natural resources ranging from wetland and scenic areas to fish, wildlife, and rare, plants, animals, and natural communities. The Cochecho's water quality, once Class C and D, has been upgraded to Class B and is now used for boating, fishing, and other recreational activities. Protection of the Cochecho's wealth of natural resources as well as improvement of water quality, are high priorities.

Figure 4

Fresh Creek as it enters the Cochecho River.

Recommendations

Issue: Water Quality – Outfalls and Stormwater Runoff

There are at least six outfalls to the Cochecho River within the study area. One of these, a four foot pipe located just west of George's Marina, collects and discharges stormwater runoff from Dover's entire north end, south of Garrison Hill and including the east side of Central Avenue. As a result of recent drainage improvements to Cochecho Street, all stormwater drains in the Cochecho Street area are tied together and discharge at this one outfall. Thus, non-point pollutants from urban runoff as well as raw sewage from some homes still tied into these collection and outfall systems, are entering the Cochecho. Each year, the Department of Public Works conducts tests in order to identify and subsequently remove raw sewage sources still connected to the stormwater collection system. If steps are not taken to address this pollutant source, water quality will continue to be negatively impacted despite relocation of the Sewage Treatment Plant.

Recommendation #29: Water Quality – Outfalls and Stormwater Runoff

- The City of Dover should continue to investigate and eliminate direct and indirect sewage flows to the Cochecho River from private businesses and residences.

- The City of Dover should minimize stormwater runoff to the Cochecho River from new and existing development by requiring "Best Management Practices" (BMPs) such as the interception and diversion of stormwater to detention basins to allow for natural assimilation of stormwater.

Issue: Water Quality – Overboard Discharges

By federal law, boaters are only allowed to discharge on board wastes at sea. There is no data available regarding the frequency with which overboard discharges from pleasure boats takes place in the Cochecho River, nor is there any data concerning the water quality impacts of those discharges. However, there is currently no pump-out facility to serve pleasure boats using the Cochecho River. In fact, the closest facility is located at the Wentworth Marina in New Castle.

The U.S. Coast Guard is the only agency with enforcement authority regarding overboard discharges, and the agency's limited resources make enforcement of overboard discharge regulations a relatively low priority. Thus, while the downstream relocation of the Sewage Treatment Plant downstream will improve water quality, water quality could still be a problem if boaters continue the practice of overboard discharge. Assuming an increase in recreational boating on the river, as well as the development of additional marina facilities, overboard discharge could become a significant problem.

Recommendation #30: Water Quality – Overboard Discharges

- Any future marina developments of significant size should be required to provide for an on-site vessel sanitary pump-out facility and on-shore public restroom facilities for transient and resident boaters.

- The State of New Hampshire should adopt legislation requiring future marina developments to provide for on-site vessel sanitary pump-out facilities.

Issue: Local Natural Resource Protection Regulations

Tidal marshes are found adjacent to much of Fresh Creek and along the northern and southern banks of the Cochecho between Fresh Creek and the Cochecho's confluence with the Salmon Falls River. These wetlands serve a number of vital roles. For example, they act to detain and absorb floodwater, filter pollutants, and provide habitat for many species. According to the N.H. Natural Heritage Inventory data base, rare plant, animal, and/or natural communities exist along the Cochecho River between Upper Narrows and Emerson Creek. Alteration of the mudflats may result in the disturbance of the rare plants found within this area. While the Cochecho does not support any commercial fishing interests, it does support a recreational fishery. The N.H. Fish and Game conducts management and monitoring programs for a number of species.

Two overlay zoning districts – the Conservation District (City Code Chapter 170-27) and the Wetland Protection District (City Code Chapter 170-27.1) – protect natural resources within the rural portion of the Cochecho River study area. Review of these districts indicates that they are adequate to protect these resources.

Recommendation #31: Local Natural Resource Protection Regulations

- The City of Dover should continue to enforce the provisions of the Conservation District (City Code Chapter 170-27) and the Wetland Protection District (City Code Chapter 170-27.1)

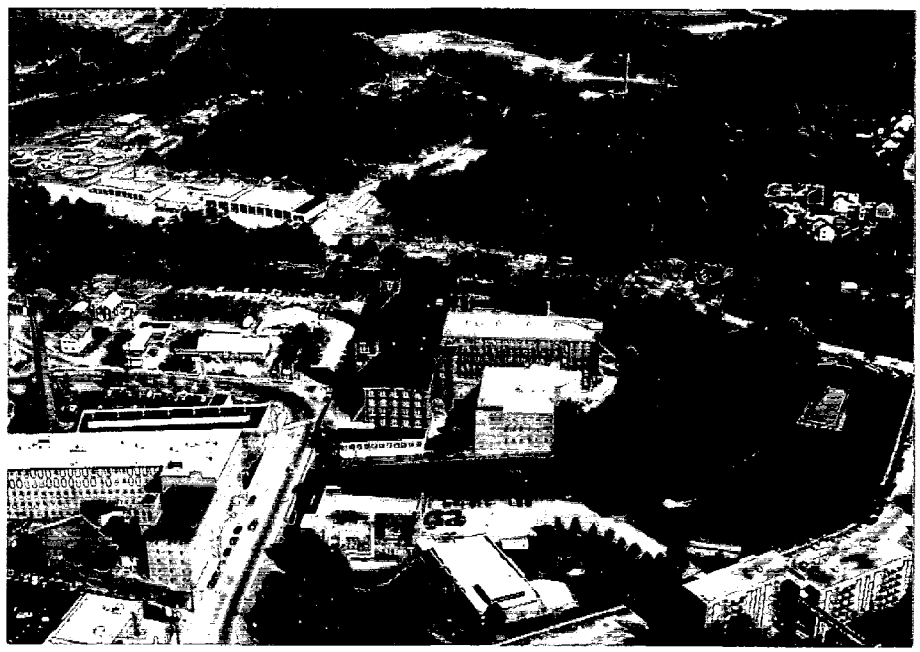
- The City of Dover should use local zoning, subdivision, and site plan review regulations to assess and mitigate development impacts on natural resources.

Waterfront Redevelopment

Introduction

Over the past two decades, Dover has pursued a coordinated, long-term effort to redevelop and revitalize its Central Business District. The City has made significant progress towards achieving this goal – infrastructure improvements and building rehabilitation have transformed the character of Dover's downtown; and the historic Pacific Mills which dominate the City's central core, are being renovated and leased for office use. Currently, the City is interested in redeveloping and revitalizing the Cochecho River waterfront adjacent to the Pacific Mills.

Figure 5



The Pacific Mills and the Clarostat building on the Cochecho's north bank in downtown Dover.

Recommendations

Issue: Mixed Use and Water Dependent Development

Restoring the Cochecho waterfront, particularly as it relates to downtown's investment climate, is an important objective of the City's 1988 Master Plan. According to the Master Plan,

> "Along the entire seaboard, communities have capitalized on a potent combination of water, boats, retailing, residential units, and office space. Newburyport, Kennebunkport, Ogunquit, and Portsmouth provide close-at-hand examples of successful adaptive reuse and new investment drawn by waterfront locations."

In 1983, the City created the Cochecho Waterfront District, which extends approximately one-half mile from the City's downtown along the Cochecho's north bank. Permitted uses include multi-family residential, recreational, office, retail, marina, and other commercial uses. At present, much of the waterfront in this district consists of privately held vacant and underutilized land and buildings.

> Recommendation #32: Mixed Use and Water Dependent Development
>
> The City of Dover should encourage the development of a mix of retail, office, residential, and water dependent uses within the Cochecho Waterfront District, while ensuring that a greenbelt is maintained along the river's edge (see Area B, **Map 2**).

Issue: Mixed Use Redevelopment – Clarostat Building

The Clarostat building, adjacent to downtown Dover's historic Pacific Mills complex in the elbow of the Cochecho River, is zoned Urban Multiple Use District (UMUD). Uses permitted within this district include a variety of commercial uses as well as light industry, several community/public uses, and multi-family dwellings. The Clarostat Manufacturing Company, the current occupant of the building, is planning to relocate and the building is for sale.

Recommendation #33: Mixed Use Redevelopment – Clarostat Building

The City of Dover should encourage the private redevelopment of the Clarostat building to accommodate a mix of residential and non-residential uses. This may be accomplished, in part, through a joint public-private partnership (see Area A, **Map 2**).

Issue: Infrastructure Improvements

Improving access to the Cochecho Street area will play an important role in developing this portion of the Cochecho waterfront for residential, non-residential, and recreational uses. For example, infrastructure improvements such as the widening of Cochecho Street as well as installation of sidewalks and street lights, planting of street trees, and undergrounding of utilities, would attract more use of the river. Infrastructure improvements recommended in the 1984 *Pacific Mills Master Plan* which have not been implemented are listed below.

Recommendation #34: Infrastructure Improvements

The City of Dover should reconstruct the following streets:

- Reconstruct Cochecho/Portland Street intersection.
- Reconstruct Cochecho Street (to be done in 1990).
- Reconstruct Portland Street from Main Street to School Street.

This reconstruction effort should include improvements such as widening, installation of sidewalks and street lights, planting of trees, undergrounding of utilities, and other appropriate safety and aesthetic improvements.

Issue: Parking

As Dover grows and the City's waterfront is revitalized, the demand for parking will increase significantly. Therefore, there is a need for additional, strategically located parking facilities to service water related facilities.

Recommendation #35: Parking Ratios

The City of Dover should require that new water-related facilities provide .75 parking spaces for each boat slip (either private or public development).

Issue: Satellite Parking Lot

According to the 1984 *Pacific Mills Master Plan,* the total number of parking spaces available in Dover's Central Business District is inadequate. The study also indicated that intensification of use or redevelopment of vacant parcels will only worsen the problem. Further, the plan states that because of the limited land area of most of the Cochecho's waterfront parcels, parking is a problem.

Recommendation #36: Satellite Parking Lot

The City of Dover should develop a 50-car parking area to support waterfront use in the triangle between Portland Street and Portland Avenue. This may be accomplished, at least in part, by requiring cash payments for this off-site improvement from developers who are unable to meet waterfront parking standards.

Issue: Zoning/Consistency

Existing zoning is sufficient to ensure appropriate and compatible water-dependent and water-enhanced land use along the waterfront. (An exception to this is the need to rezone the City-owned lands from industrial to Cochecho Waterfront District).

Recommendation #37: Zoning/Consistency

The City of Dover should review proposed projects for consistency with the goals and objectives of the Cochecho River Harbor Management Plan (after adoption by the City) and those of the New Hampshire Coastal Zone Management Program.

SECTION IV

Maximizing Harbor Management Revenue Sources

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Maximizing Harbor Management Revenue Sources

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Section IV
Maximizing Harbor Management Revenue Sources

Introduction

Implementation of the Cochecho River Harbor Management Plan will involve a combination of public and private sector initiatives as well as joint public-private partnerships. Certain recommendations designed to increase public access, such as development of a new riverfront park, boat launch facilities and a waterfront greenbelt, are ideal candidates for a combination of federal/state/local funding through, for example, the Community Development Block Grant program, the Land and Water Conservation Fund, and Coastal Zone Management grants. Other recommendations, such as the mixed use development and inner harbor and marina facility proposed for the City-owned land, represent an excellent opportunity for a public-private partnership initiative. City-funded infrastructure improvements, including street reconstruction and elimination of sewage flows, should act to stimulate private sector investment in the Cochecho waterfront. Finally, the implementation of some recommendations, such as zoning changes and enforcement of existing regulations, will not require any additional funds.

Detailed cost estimates and funding source assignments for all recommendations presented in this plan are beyond the scope of this study.* Instead, the following focuses specifically on maximizing harbor management revenue sources. It presents a methodology for establishing a local harbor management fund, an overview of N.H. Port Authority harbor management revenue needs, and potential methods for maximizing revenue sources.

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* However, the 1984 *Pacific Mills Master Plan* does contain cost estimates for a number of them.

City of Dover – Cochecho River Harbor Management Fund

The City of Dover should establish, by ordinance, a Cochecho River Harbor Management Fund, or similar funding mechanism, earmarked specifically for implementation of the Cochecho River Harbor Management Plan, including harbor-related administration, physical improvements, and required maintenance activities. The Harbor Management Fund ordinance should include:

- A section that creates the fund, states the purpose of the fund, directs the City financial officer to establish the fund in the accounts of the City, and identifies possible sources of Harbor Management Fund monies.

- A section listing the money sources that should be deposited in the Harbor Management Fund. Possible sources include: local permit fees; state boat registration funds; boat launching fees; maintenance dredging funds; federal, state, or private grants; and contributions, fines and/or penalties.

- A section which outlines the investment and management of harbor funds. The procedure for placement of monies into this fund should be identified; weekly or monthly deposit deadlines should be specified; and idle money investment policy and the allocation of equitable investment fees should be referenced.

- A section which identifies the procedure for fund expenditures as well as the procedure for the development and approval of the annual budget prior to expenditures from this fund by the City of Dover.

N.H. Port Authority – Future Revenue Needs

The N.H. Port Authority should secure additional equipment and staffing, particularly additional Harbormaster assistance in order to carry out the harbor management and enforcement recommendations contained in the Cochecho River Harbor Management Plan.

In addition to its current staffing of one full-time Chief Harbormaster and six part-time Harbormasters, it is recommended that the New Hampshire Port Authority establish three new full-time Harbormaster positions. This would create a full-time Harbormaster position to monitor the Cochecho River; a Harbormaster for the Lamprey River; as well as staff to assist in the placement of moorings and navigational aids (as outlined below in Section VI). All additional staffing would be under the direction of the Chief Harbormaster for the New Hampshire Port Authority. The State should also allow the N.H. Port Authority the necessary funds to purchase equipment and provide operating expenses for Harbormaster vessels.

The additional annual cost of these expenditures is estimated at approximately $150,000. Of this, $100,000 would be for the cost of additional staff and staff training, and $50,000 for capital purchases and operating expenses. Possible mechanisms through which the N.H. Port Authority could seek funding for these anticipated costs are outlined below.

N.H. Port Authority – Methods for Maximizing Revenue Sources

An informal survey was conducted in order to determine what techniques other states use to fund harbor improvement and management projects. This effort was undertaken in order to identify additional revenue sources to fund N.H. Port Authority harbor management and improvement activities.

In general, revenue can be increased by using one or more of the following funding sources:

- Vessel Fees
- Assessments/Fines
- User Fees
- Permit/Licensing Fees
- Sale/Lease of Real Property

Revenue sources and funding methods are described below.

Mooring/Slip Fees

The N.H. Port Authority is empowered to collect an annual fee of $2.00 per foot of vessel length for all vessels moored in tidal waters. A comparison of this fee to those used elsewhere indicates that this fee is moderate to low. For example, in Massachusetts, where the state allows communities to assess mooring fees, fees range from $2.00 to $8.00 per vessel foot. These fees are placed in a dedicated fund for harbor improvement and management projects. Likewise, Connecticut allows communities to assess a mooring permit fee of $100/vessel, provided that it is placed in a dedicated harbor fund.

In addition to charging fees for vessels on moorings, New Hampshire could apply the fee system to cover all tidal vessels, whether on a mooring or on a dock or slip (even in commercial facilities). This is based on the presumption that the services supplied by the N.H. Port Authority benefit boaters using both moorings and docks or slips, and therefore the costs should be shared by all.

Vessel Registration Fees

New Hampshire charges an average vessel registration fee of approximately $26.40. As a source of revenue, New Hampshire fairs better than New York which only charges an average of $7.80 per vessel. On the other hand, Florida receives an average of $33.00 per vessel, while New Jersey receives $42.20, and Connecticut $230.00 (see Table 1).

Table 1
Annual Vessel Registration Fees*

Vessel Classification	NH	NY	CT	NJ	FL
<16'	$12	$3	$15	$6	$4
16-25'	$17	$6	$64	$14	$11
26-39'	$26	$10	$16	$26	$31
40-65'	$36	$10	$388	$40	$51
>65'	$46	$10	$525	$125	$68

* Due to differences in vessel classifications, fees are averaged.

Boat Fees

New Hampshire is similar to most New England states in that the Boat Fee (or Excise Tax) is the primary source of harbor management and improvement revenue for the state. As New Hampshire recently increased these fees, it is not likely that additional revenues can be generated from this source in the near future.

Special Waterfront Assessment Districts

Special Waterfront Assessment Districts are a special assessment or betterment district for specific waterfront zones. A charge is assessed by the municipality on owners of property who will benefit from an adjacent or nearby improvement. This technique is intended to recoup the costs of public investments. Revenues generated through this mechanism are typically used for such activities as erosion control, bulkheading, breakwaters, street construction, sewer and infrastructure improvements, and parking lots. Assessments are usually determined based on proportional frontage, the land area served by the improvement, or the value which the improvement adds to the land.

Fines from Enforcement Actions

Revenues can be generated as a result of law enforcement actions undertaken by N.H. Port Authority harbormasters. This would include any violation of any rule or regulation of the Authority promulgated under NH RSA 271-A (Rules and Regulations pertaining to the Harbors and Tidal Waters of the State of New Hampshire). As boating activity on the tidal waters increase, so will enforcement actions, potentially resulting in a corresponding increase in revenues.

Local Real Estate Transfer/Gains Tax

The concept of establishing a real property gains or transfer tax has been successfully used in several New England locations, most notably in Nantucket, Massachusetts and Little Compton, Rhode Island. In both cases, the state legislature has allowed the community to impose a real estate transfer tax of up to 2 percent (Nantucket) and 5 percent (Little Compton) on all real estate transactions. To date, Nantucket has generated more than $6 million through this mechanism. In both cases, the transfer tax is earmarked for land acquisition. Likewise, the Massachusetts State Legislature recently debated state-wide enabling legislation for municipalities to initiate a 2 percent Land Bank or transfer tax to be used, in part, for land acquisition. The State of Vermont has established a similar land gains tax which imposes a

substantial graduated tax on capital gains from the resale of property held less than six years.

New Hampshire communities do not currently have the authority to assess local real estate transfer taxes. However, should state enabling legislation be initiated, Dover could develop a local real estate transfer program targeted to waterfront lands. The proceeds of such a program could be used for harbor management, public access, resource protection and/or some other public good.

Marine Motor Fuel Tax

The State of New York recently considered a one-cent increase in the marine motor fuel tax as a means of raising additional revenues to support marine recreation and management programs.

User Fees for Services

Increasingly, governments at the state, federal and local levels are relying on "user fees" as a means of increasing revenues. User fees are based on the pay-as-you-go or if-you-use-it/you-pay-for-it principle. Generally, user fees are a one-time cost for services. While appropriate in many instances, user fees do not always spread costs equitably for all users. Examples of user fees which could be increased or established include:

- Boat launch fees
- Boat ramp fees
- Parking fees
- Boat towing fees
- Fuel assistance fees
- Search and rescue fees
- Inspection fees

Marine Facilities Fees

Similar in nature to user fees, marine facilities fees require users to purchase a renewable pass or sticker. Primarily used as a local revenue source, the marine facilities fee is comparable to the season pass used in most state and federal parks. Hingham, Massachusetts uses such a program to generate revenues.

Vessel Operators Licensing Fee

Several states now require all vessel operators to obtain an operators license. For example, the state of Michigan requires all operators under the age of sixteen to take a state-sponsored marine safety course prior to their obtaining a license. The cost of the program is offset by a modest licensing fee.

Lease of Submerged Tidal Lands

At least twenty-three states have submerged lands leasing systems. The State of New Hampshire, however, does not receive any income through the lease of its submerged tidal lands. While several states generate substantial revenues from these leases, in most states program revenues do not exceed administrative costs. A detailed analysis of this option is described in Section VII.

Ground Lease and Land Sales

Similar in concept to lease of submerged tidal lands, this revenue generation method attempts to retrieve the real estate value found in uplands adjacent to waters. The N.H. Port Authority and other State agencies could enter into agreements to sell or lease their surplus lands for water dependent uses.

The Massachusetts Port Authority has successfully used this approach in developing much of the previously abandoned or blighted Boston waterfront into a vital working port. In several instances, MassPort entered into ground leases with private developers who, in return, constructed development projects on land.

Sale of Natural Resources

Many states have used the sale of their natural resources such as gravel, sand, and oil, to generate revenues. In some cases, these sales have been small and project specific, such as the sale of clean sand material from a dredging project.

SECTION V

Situation Analysis

Section V
Situation Analysis

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Section V
Situation Analysis

Land and Water Use

Introduction

Current land and water use patterns within the Cochecho River study area have been shaped by the events of the last several centuries. The Cochecho River, connected to Great Bay and the ocean by the Piscataqua River, was once part of a vast, interconnected transportation system, making Dover an important center of commerce. This transportation link, coupled with the water power provided by the Cochecho River Falls, resulted in the development of the City's early lumber mill-based economy. Later, the Cochecho Mills (now the Pacific Mills) in downtown Dover utilized the water power of the falls to manufacture textiles.

Dover's thriving manufacturing economy began its economic decline with the downturn of the northern textile industry during the first half of this century. This marked the beginning of deteriorating infrastructure and housing stock in the City's downtown area. For many years, the mills remained vacant or underutilized.

Over the past two decades, Dover has pursued a coordinated, long-term effort to redevelop and revitalize its Central Business District. The City has made significant progress towards achieving this goal – infrastructure improvements and building rehabilitation have transformed the character of Dover's downtown, and the Pacific Mills are currently being renovated and leased for office space. Today, the mills stand along the Cochecho as evidence of Dover's historic past. As the dominant feature of the City's Central Business District, the Pacific Mills complex and the nearby Clarostat building provide residents with a sense of identity and play a significant role in defining downtown Dover's special character.

Currently, the city is interested in redeveloping and revitalizing the Cochecho River waterfront adjacent to the Pacific Mills. In addition, the City recognizes the importance of protecting open space along the relatively undeveloped portion of the

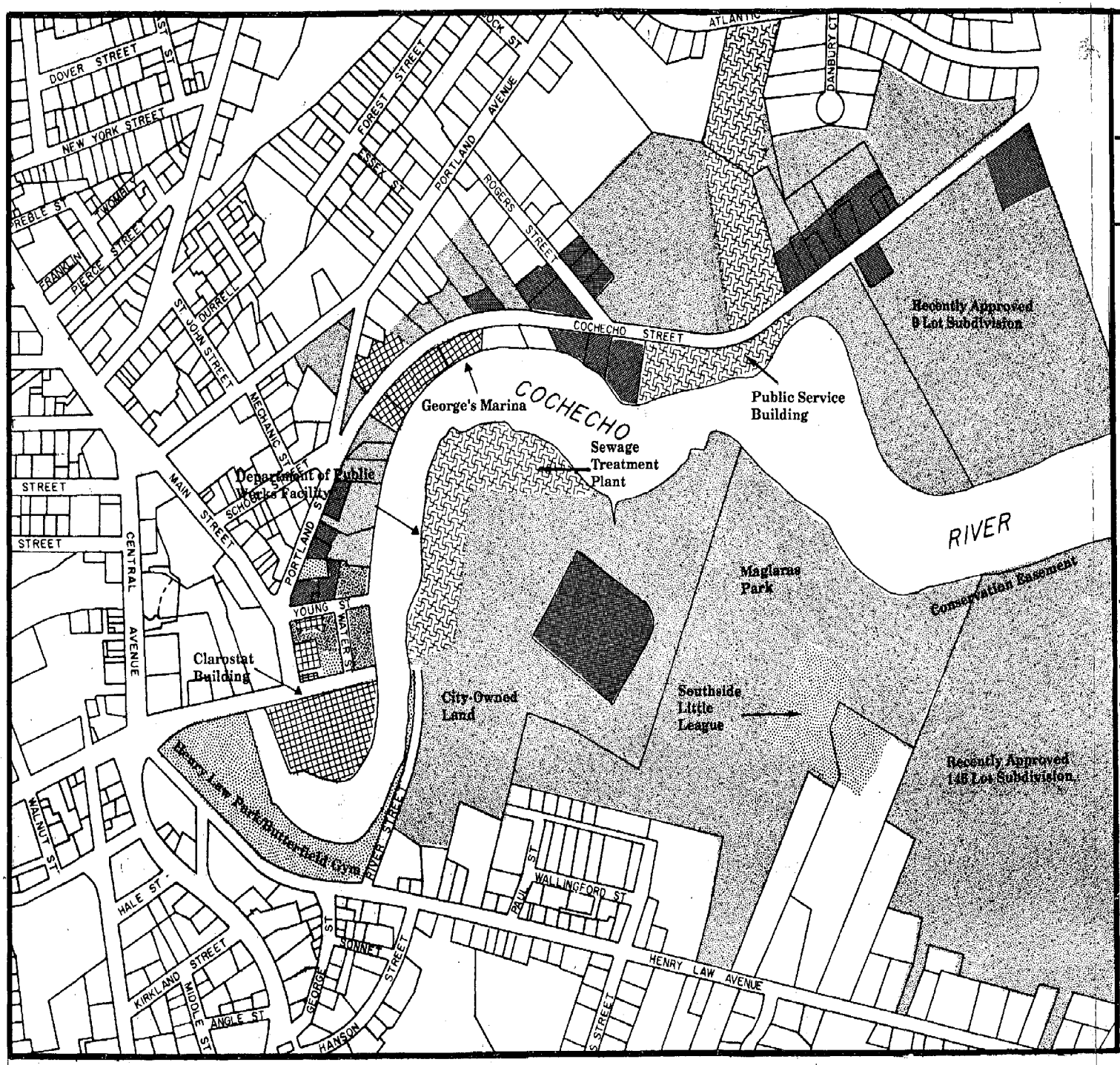
Cochecho east of downtown. In particular, the City recognizes the need to more fully utilize the Cochecho River's significant waterfront development and recreational potentials by developing an integrated, coordinated strategy which recognizes both future water and associated land use issues.

Current Land Use Trends

For the purposes of this study, land use patterns along the tidal portion of the Cochecho River can be broken into three subareas. The first subarea consists of the land area along the north bank of the river, from Washington Street to Rogers Street. Generally speaking, much of this area of the Cochecho waterfront consists of privately held vacant or underutilized land and buildings (see **Map 3a**). The most important exceptions to this is the Clarostat building located on Washington Street which is currently used for manufacturing; and George's Marina off Cochecho Street.

The City-owned land, located directly across the river, comprises the second subarea. This land, located near downtown on the south bank of the Cochecho, is currently in public use and is used primarily for the City's Sewage Treatment Plant, the Department of Public Works facility, and Maglaras Park (see **Map 3a**).

Underutilized and vacant properties located within these two subareas are listed below in **Tables 2 and 3** and depicted on **Map 3a**. The Clarostat building (Tax Map 23, Lot 14) is currently for sale. The Clarostat Manufacturing Company, the current occupant of the building, is planning to relocate. Clarostat currently uses the unpaved parking lot (Map 23, Lot 13) located adjacent to Clarostat between Water Street and the Cochecho.



Cochecho River Harbor Management Plan

Map 3a
Generalized Existing Land Use, Urban Core Portion of Study Area

Legend

- Residential
- Commercial/Industrial
- Public/Semi-Public
- Recreation/Entertainment
- Parking Lot
- Vacant (Undeveloped)

Approximate Scale 1" = 400'

Source: City of Dover, 1987, Based on tax assessment records, aerial photographs, and field surveys.

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Table 2
Underutilized Properties

Name	Map	Lot
Clarostat Building	23	14
Unpaved Parking Lot	23	13
DPW Garage	22	1 (part of)
Sewage Treatment Plant	22	1 (part of)
Public Service Building	24	133
Restaurant (out of business)	24	139

Table 3
Vacant Properties

Left Bank

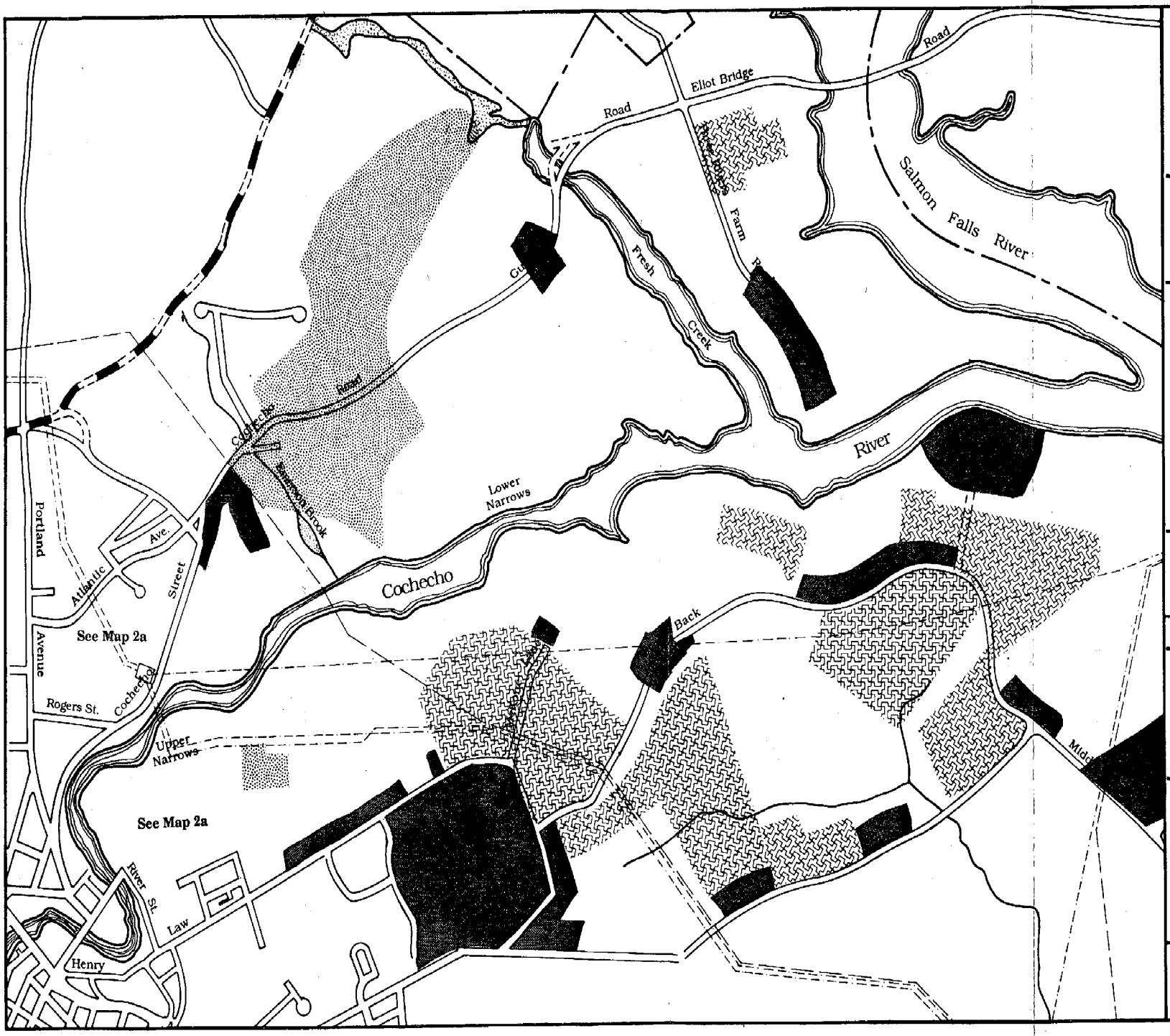
Map	Lot
23	94,95
23	3,3A
23	1
24	141,142
24	136,137
24	105A
24	108 (part of)
24	109A, 112
24	114 (part of)
24	15 (part of)
24	132
N	22, 23 (site of recently approved 9 lot subdivision)

Right Bank

Map	Lot
22	1 (part of) (City-owned property; DPW Garage and Sewage Treatment Plant located on part of parcel)
22	42 (part of) (Maglaras Park)
K	2 (site of recently approved 146 lot subdivision)

The balance of the study area, located downstream, is characterized primarily by large tracts of rural, undeveloped land along both banks of the Cochecho River to its confluence with the Salmon Falls River (see **Map 3b**). Land uses within this segment of the study area include a 35-acre commercial farm located between the river's southern bank and Henry Law Avenue; two tree farms west of Fresh Creek; the Cochecho River Country Club adjacent to the northern bank of the Cochecho River east of Emerson Brook; and several residences. Recent subdivision activity within this portion of the study area has been limited to:

- a 146 lot subdivision located on a waterfront parcel just east of Maglaras Park which includes a 250 foot conservation easement along the river;
- a 9 lot subdivision located directly across the river (Map N, Lot 22); and
- a three lot waterfront subdivision west of McKone Lane.



Cochecho River Harbor Management Plan

Map 3b
Existing Land Use, Rural Portion of Study Area

Legend

- Residential
- Recreational
- Agricultural

Scale 1" = 1,000'

Source:

City of Dover, 1987. Based on aerial photographs.

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Future Land Use Trends

Introduction

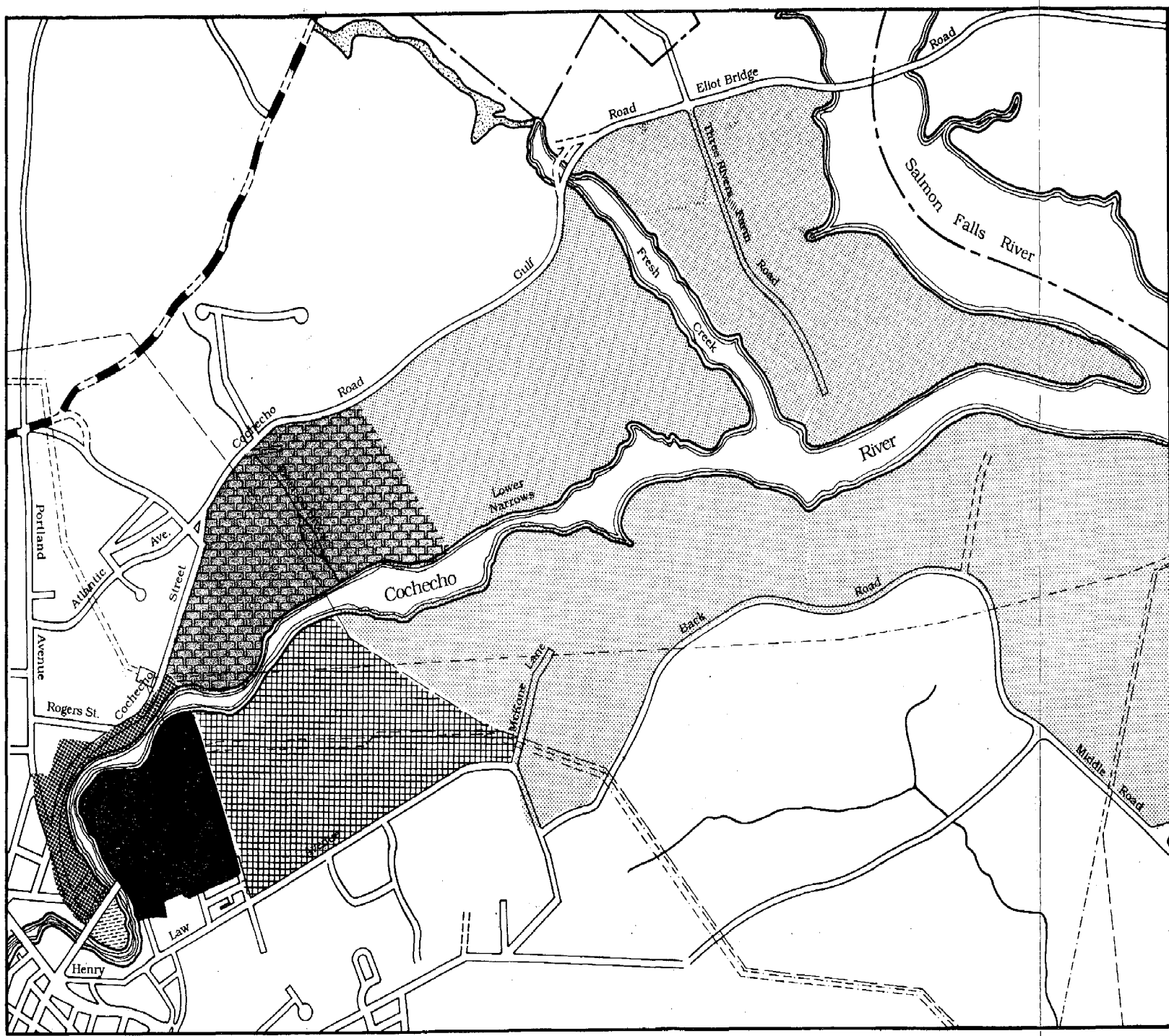
Policy documents and planning studies, such as the 1984 Pacific Mills Master Plan, the 1989 Land Acquisition and Protection Study, and the City's 1988 Master Plan, provide an indication of the type of future land use the City envisions for the Cochecho River study area. These studies address future waterfront redevelopment and open space/recreation needs within the study area and provide specific objectives, recommendations, and implementation strategies designed to address these needs. Many of these as yet unimplemented objectives and recommendations are still relevant today and will be discussed in Section III, the Harbor Management and Waterfront Plan.

Existing zoning will also play a role, at least in the short term, in determining future land uses in the study area. Generally speaking, areas zoned for commercial and higher density residential use are located within the downtown portion of the study area, while lower density residential uses are zoned for the eastern portion of the study area. Below, is a discussion of issues and recommendations detailed in recent planning studies which are relevant to the Cochecho River study area.

Waterfront Redevelopment

Existing Zoning

Future waterfront redevelopment strategies within the downtown portion of the study area will be shaped by three different zoning districts. These are the Cochecho Waterfront District; the Industrial (I-2) district occupied by the Department of Public Works Facility and the Sewage Treatment Plant; and the Urban Multiple Use District occupied by the Clarostat building located in the river's elbow in downtown Dover (see Map 4).



Cochecho River Harbor Management Plan

Map 4
Generalized Zoning

Legend

- Rural Residential (single family)
- Medium Density Residential (single family)
- Low Density Multi-Residential (multi-family)
- Cochecho Waterfront District
- Industrial
- Urban Multiple Use

Scale 1" = 1,000'

Source:

Zoning Map, City of Dover, 1988
Dover Master Plan.

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Cambridge, Massachusetts 02142

IEP inc
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39 Bow Street
Portsmouth, NH
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The Cochecho Waterfront District (CWD) was created by the City in 1983. This district, which extends approximately one-half mile from the City's downtown along the Cochecho's left bank, is approximately 250 feet in depth. It encompasses the area between the Cochecho's left bank and Cochecho Street; the area bordered by Young Street, Washington Street, Main Street, and the river's left bank; and approximately half of the area bordered by Portland Street, Portland Avenue, Cochecho Street, and Rogers Street. A variety of commercial uses, including marinas, are permitted by right in this district. Multi-family dwellings are allowed by right with certain conditions. Conversion of existing dwellings to accommodate additional residential units is permitted by special exception, provided certain conditions are met. A number of community/public uses, including public recreation, are also allowed.

The Clarostat building, located in the elbow of the Cochecho in downtown Dover, is part of the City's Urban Multiple Use District (UMUD), created in 1983. Permitted uses include a variety of commercial uses as well as light industry, several community/public uses, and multi-family dwellings (with certain conditions).

The area occupied by the Department of Public Works facility and the Sewage Treatment Facility is zoned Industrial (I-2). Industrial uses as well as a number of commercial and community/public uses are allowed in this district by right. Marinas and new residential uses are not currently allowed in this district.

Pacific Mills Master Plan Recommendations

The *Pacific Mills Master Plan,* prepared for the City of Dover in 1984, documents recommendations and implementation strategies for the redevelopment of the Cochecho River waterfront in the City's downtown area. In addition, the plan details recommendations for the reuse of the City-owned land near downtown, currently used for the Sewage Treatment Plant and Department of Public Works facility. One of the plan's key concepts is to re-establish the City's historic role as a port town and enable the development of its most underutilized asset – the Cochecho River and its ocean access.

The plan makes specific recommendations regarding infrastructure improvements such as street reconstruction and parking expansion; redevelopment of existing buildings for mixed use; relocation of public facilities; zoning changes; and public access/recreation improvements. In addition, the plan provides a phased approach to these redevelopment and revitalization activities. To date, many of the recommendations have been implemented or are in the process of being implemented.

Recommendations focussed on the following four areas:

- Pacific Mills Area (Central Business District)
- School/Mechanic Street Area (Central Business District)
- Cochecho Waterfront
- City-Owned Land (adjacent to downtown along the banks of the Cochecho).

Of particular relevance to the current Cochecho River study are the plan's recommendations concerning the Cochecho Waterfront and the City-owned Land. Generally speaking, parking, road, and other infrastructure improvements in the downtown area have been completed. However, many of the recommendations which pertain to use of vacant and underutilized land along the banks of the Cochecho River adjacent to the downtown area (Cochecho Waterfront and City-owned Land), have not yet been implemented.

Recommendations pertaining to Cochecho waterfront redevelopment include:

- marina/commercial development between the northern bank of the Cochecho and Cochecho Street (Pacific Mills Master Plan Recommendation #17) (not completed);

- new housing with on-site parking on the northeastern bank of the Cochecho River off of Cochecho Street (Pacific Mills Master Plan Recommendation #19) (not completed); and

- providing public access to the Cochecho River from Cochecho Street just east of Cochecho Street's intersection with Portland Street (Pacific Mills Master Plan Recommendation #18) (not completed).

Recommendations for the City-owned Land, currently zoned industrial, on the southwestern bank of the Cochecho River include:

- relocation of the Sewage Treatment Plant (Pacific Mills Master Plan Recommendation #27) and the Department of Public Works facilities (Pacific Mills Master Plan Recommendation #23) (in process; to be completed by 1992);

- dredge the channel of the Cochecho River in front of the Sewage Treatment Plant (Pacific Mills Master Plan Recommendation #25) (completed in 1985);

- encourage/promote private development of a portion of the City-owned land as an "inner harbor" and marina, including the preparation of a developer's kit (Pacific Mills Master Plan Recommendation #24) (not completed);

- develop a new riverfront park on a portion of the City-owned land (Pacific Mills Master Plan Recommendation #22) (not completed);

- market a portion of the City-owned land for residential development (Pacific Mills Master Plan Recommendation #33); (not completed);

- construct a new Washington Street bridge over the Cochecho River (Pacific Mills Master Plan Recommendation #21) (not completed); and

- develop open space/recreation along the Cochecho River (Pacific Mills Master Plan Recommendation #30) (not completed).

Land Acquisition and Protection Study Recommendations

The Land Acquisition and Protection Study, prepared for the City of Dover in 1989, also indicates that public access to the Cochecho River is a high priority, particularly in downtown Dover or the immediate area. The following two properties are recommended for this use:

- Public Works Area (Map 22-Lot 1, Map 22-Lot 2)
- Maglaras Park (Map 22-Lot 42)

Acreage: 56+/- acres
River frontage: 3,300 feet

Maglaras Park, the City's Sewage Treatment Plant, and the Department of Public Works facility are currently located on this land. However, as already indicated, relocation of the Treatment Plant and Public Works facilities will take place in the near future creating the opportunity for the development of alternative future land uses. The study recommends this land be used for public access to the Cochecho River. According to the 1989 study,

> Situated at the head of the (tidal) Cochecho River Corridor, this area would be ideal for a public boat launching area which could handle all sizes and types. There are several possible locations. Soils and slope are not a problem. Width and depth of river could present minor difficulties at certain tides.

Additional recommendations made by participants at the Cochecho River Harbor Management Plan kickoff meeting included the need for a town landing site near downtown which could provide a "Prescott Park" type of environment and a location for transient boaters. Participants also indicated that the existing "pipebridge," which crosses over the Cochecho between the City-owned land and the end of Washington Street, represents a potential pedestrian access between downtown and the City-owned land where the Sewage Treatment Plant is located. Since the pipebridge may have been engineered to support only the weight of the pipe itself, the City engineers will need to reassess whether this is feasible. Alternatively, the City could completely reconstruct the bridge in order to provide both pedestrian and vehicular access to the City-owned land.

While the area in front of the Sewage Treatment Plant was recently dredged, sediment continues to accumulate behind the gravel causeway which runs into the center of the river and supports the outfall pipe from the Sewage Treatment Plant. Consequently, this area will need to be dredged again following relocation of the Sewage Treatment Plant. The City has a permit from the federal government which will enable it to conduct maintenance dredging in the future.

Dover Master Plan Recommendations

Dover's 1988 Master Plan also provides direction for the future use of land within the study area. In particular, the City is committed to encouraging future downtown revitalization. Restoring the Cochecho waterfront, particularly as it relates to downtown's investment climate, is an important objective stated in the plan. In addition, the Master Plan indicates that the future use of large parcels of City-owned land along the Cochecho are "... an ideal location to optimize open space, recreation, and water access, with a private development scheme." According to the Master Plan,

Along the entire seaboard, communities have capitalized on a potent combination of water, boats, retailing, residential units and office space. Newburyport, Kennebunkport, Ogunquit, and Portsmouth provide close-at-hand examples of successful adaptive reuse and new investment drawn by waterfront locations.

Dover has a strong opportunity to attract an appealing mix of shops, offices, and residential units along its downtown Cochecho waterfront. The land currently occupied by its public works garage and by the soon to be abandoned sewerage treatment plant, affords a unique opportunity to craft an inviting mix of marina, retail, office, and residential space. In doing so, it would draw an important entertainment component to the downtown scene, place excess public lands on the local tax roll and recapture the flavor of the city's historic past.

The Master Plan specifically notes that the potential exists for conversion of the Clarostat Building, currently used for manufacturing, to mixed use and cites the need to draft a development strategy for the public lands adjacent to the Cochecho River in downtown.

Public Access, Open Space, and Recreation

Existing Open Space and Recreational Resources

Existing open space and recreational resources within the study are depicted on **Map 3a**. These resources and facilities include:

- Fish Ladder Park (City-owned) (2,300 square feet)
- Henry Law Park and Butterfield Gym (City-owned) (6 acres)
- Maglaras Park (City-owned) (29 acres)
- Southside Little League (3 acres)
- Cochecho Country Club (privately-owned)

There are currently no municipal boating facilities on the tidal Cochecho. In fact, George's Marina, located on Cochecho Street on the north bank of the river, provides the only direct boating access to the tidal Cochecho. The closest public access point, to be completed in Spring 1990, is located on the Salmon Falls River at the Eliot Bridge in South Berwick, Maine. This two acre parcel, owned by the town of South Berwick, will include 25 to 30 parking spaces and a small picnic area. This ramp will provide small motor boats and hand-powered craft with access to the Salmon Falls River, north of the river's confluence with the Cochecho.

Potential public access and recreation facilities near downtown have already been described above. The following discussion focuses primarily on the relatively rural, undeveloped portion of the study area beginning at the easternmost edges of the industrially zoned area occupied by the Sewage Treatment Plant and the Cochecho Waterfront District.

Existing Zoning

Future activities within the relatively undeveloped part of the study area will be influenced by the zoning provisions of several residential districts as well as two overlay districts. These provisions are described below.

The river's northern bank near downtown is zoned Low Density Multi-Use (multi-family) and, further east, Rural Residential (single family). The river's southern bank is zoned Medium Density (single family) near downtown and Rural Residential (single family) to the east (see **Map 4**).

Two overlay zoning districts – the Conservation District (City Code Chapter 170-27) and the Wetland Protection District (City Code Chapter 170-27.1) – will affect future activities within the rural portion of the Cochecho River study area as well. The following areas are subject to the regulations of the City's overlay Conservation District:

- areas with slopes in excess of twenty percent (20%);
- areas within one hundred (100) feet of the mean high water of any water body, river, stream, swamp, or marsh subject to tidal action;
- and those areas within a minimum of fifty (50) feet of the mean high water of any stream, brook, or other freshwater body.

Within this district, land uses are limited to those most appropriately located in environmentally sensitive areas. Alteration or disturbance of the natural state can only be permitted through special exception of the Zoning Board of Adjustment. Permitted uses include open space and recreation which preserves the aesthetics, vegetation, and wildlife habitat of the natural shoreline and waterway. Soil erosion and sedimentation plans are required for uses not otherwise permitted in this district, which may include the erection of a structure, dredging, filling, draining, or otherwise altering the surface configuration of the land. In addition, the cutting of trees is limited to no more than fifty percent (50%) of the basal area within a ten-year period. Further, a continuous area of tree cover must be maintained. The provisions of this district are not binding on Cochecho waterfront lots located in the Central Business, Urban Multiple Use, and Cochecho Waterfront zoning districts, provided that any proposed development actively integrates and makes use of the Cochecho River waterfront resource.

The City's overlay Wetland Protection District includes all areas of very poorly drained soils and all areas of poorly drained soil which presently support, or which under natural conditions will support, a predominance of hydrophytic vegetation; and all areas of poorly drained soils regardless of vegetative types, which are contiguous to surface waters such as ponds, streams (perennial or intermittent), and rivers, and within the 100-year flood zone. On poorly drained soils, any use otherwise permitted by the zoning ordinance, except on-site sewerage disposal systems, must receive conditional use approval.

Uses permitted on very poorly drained soils are limited to:

- crossing of the Wetland Protection District by a road or other accessway, utility right-of-way, communication lines, powerlines, and pipelines (subject to conditional use approval); and

- the construction or reconstruction of fences, footbridges, catwalks, boat docks, and wharves (does not require a conditional use permit provided that certain conditions are met).

Structures must be set back at least seventy-five (75) feet from very poorly drained soils and no septic tank or leachfield may be constructed or enlarged closer than seventy-five (75) feet to very poorly or poorly drained soils.

Land Acquisition and Protection Study Recommendations

The City has identified and prioritized land along the undeveloped banks of the Cochecho for future protection. Specific City goals include increasing public access, preserving open space, and creating recreational opportunities. These open space protection priorities are contained in the 1989 *Land Acquisition and Protection Study*. In addition, the study identifies the best use and a strategic plan for acquiring/protecting the identified parcels.

Open space/river corridor protection was considered the number one priority. According to the study,

- Along the Cochecho River, most of the properties are privately owned and of larger acreage and frontage. Public use would be along the river and be visual (low-intensity) – perfect for an easement program.

The study recommends the following properties, representing a total of 34,000 feet (6.4 miles) of river frontage, for protection under a Cochecho River/Easement Program:

- Public Service Co. (Map N-Lot 23)
- Silvester (Map N-Lot 22C)
- River's Edge (Map K-Lot 2) (Note, a 146 lot subdivision was recently approved on this parcel, with a 250 foot conservation easement)
- Rousseau (Map K-Lot 1) (Note, this parcel was recently sold)
- Cochecho Country Club (Map N-Lot 15)
- Childs (Map N-Lot 8A)
- Ayer (Map N-Lot 18)
- McManus (Map N-Lot 20)
- Sehnaoui (Map N-Lot 8) Also Fresh Creek
- Rollins (Map M-Lot 1)
- Rollins (Map M-Lot 4) Also Fresh Creek (Map M-Lot 3, Map M-Lot 3A, Map M-Lot 2)
- Hodgdon (Map M-Lot 2)
- Merrill (Map M-Lot 96)
- Rollins (Map M-Lot 98)

The study proposes a 200 foot set-back for easement depth. The cost of an easement program will vary, depending upon the mix of landowner donations of unbuildable areas containing steep slopes or wetland soils, with outright purchases of more developable land. The report estimates the market value of a buildable waterfront acre on the Cochecho River at $100,000 to $150,000.

Dover Master Plan Recommendations

Proposed open space and recreational facilities identified in the City's recent Master Plan and located within the study area include:

- Boat Access - on the City-owned land on the south side of the Cochecho River, across from George's marina.

- Greenbelt - on south side of Cochecho River from downtown Dover (Henry Law Park and Butterfield Gym) to confluence with Salmon Falls River (and loop beyond to points outside study area).

- Greenbelt - on east and west sides of Fresh Creek from City Line south to Cochecho River.

- Greenbelt - on north side of Cochecho River from Fresh Creek to Salmon Falls River confluence.

Current and Future Water Use Trends

Boating

There is no commercial boating traffic on the Cochecho River. The majority of recreational boating traffic is from George's Marina, located on the Cochecho's north bank near downtown. Tour boats from Portsmouth travel up the river. Discussions with the Harbor Master revealed that the river is not extensively used, and there is little transient traffic.

There are a total of five privately maintained moorings along the tidal Cochecho, three private docks, and sixty boat slips at George's Marina. The Harbor Master felt the river was underutilized and, with dredging, could accommodate additional boat slips and moorings, particularly in the area of the current Sewage Treatment Plant. According to participants at the Cochecho River Harbor Management Plan kickoff meeting, the opportunity exists for dock and pier development at the lower end of the Cochecho as long as development takes place outside of the Federal channel (50-75' wide).

Recreational boat use data specific to the Great Bay area is generally unavailable. However, according to the 1988 *Portsmouth Harbor Marine Firefighting Contingency Plan,* boating traffic in Great Bay increased by 35 percent in 1987 and similar increases were expected for 1988.

Increased public access and improved water quality as well as expanded marina and other recreational facilities related to waterfront redevelopment, are likely to increase boating traffic on the tidal Cochecho in the years ahead. While the magnitude of these increases is difficult to predict, historical boat registration data is an indicator of future recreational boating trends. However, boat registration data available for New Hampshire is limited. For example, registration forms do not require registrants to indicate the principal body of water in which the boat is used.

Prior to 1989, the U.S. Coast Guard managed boat registrations in tidal waters while the state was responsible for inland water boat registrations. From this year forward, the state data base will include boat registration data for both inland and tidal waters. State maintained computerized data files for 1985, 1987, and 1988 indicate total registered boats to be 54,288, 57,465, and 73,630 respectively (inland waters only). According to the State, this information does not necessarily include all boat registrations. However, it does provide an indication of recent growth trends in boat registrations in the state as a whole. For example, this data reflects a 35.6 percent increase in state-wide inland water boat registrations between 1985 and 1988.

The U.S. Coast Guard also publishes data on an annual basis for numbered boats on federal waters in the state. This data is shown in **Table 4** below.

Table 4
Motorboats Used on Federal Waters in New Hampshire
1981-1987

Year	Total Boats Numbered
1981	4,432
1982	6,801
1983	6,579
1984	9,242
1985	9,339
1986	9,567
1987	15,214

Source: Boating Statistics (1982-1987), U.S. Department of Transportation, U.S. Coast Guard.

While the scope of this data is limited to motorboats used on federal waters in the state as a whole, it does provide an indication of the increase in boating traffic on federal waters over this decade. According to this data, numbered boats increased 243 percent between 1981 and 1987 and 59 percent between 1986 and 1987.

Fishing and Shellfishing

The Cochecho River does not support any commercial fishing interests. Further, the Cochecho does not meet appropriate state water quality standards for shellfishing. Thus, shellfish beds within the tidal Cochecho are officially closed to shellfishing by the state.

Recreational fishing survey data, specifically for Cochecho River landings and species distribution, is not available. Detailed fish and shellfish inventory data, as well as fisheries monitoring and management data, are presented later in this report.

Other Recreational Uses

With the exception of boating and fishing, as well as limited skating and waterskiing, there are no other documented water dependent or water related recreational activities on the Cochecho River.

Coastal and Marine Resources

Introduction

The Cochecho River and its shoreland areas support a variety of natural resources ranging from wetland and scenic areas to fish, wildlife, and rare plants, animals, and natural communities. The Cochecho's historic resources are part of the legacy shaped by Dover's early shipping, manufacturing, and agricultural industries.

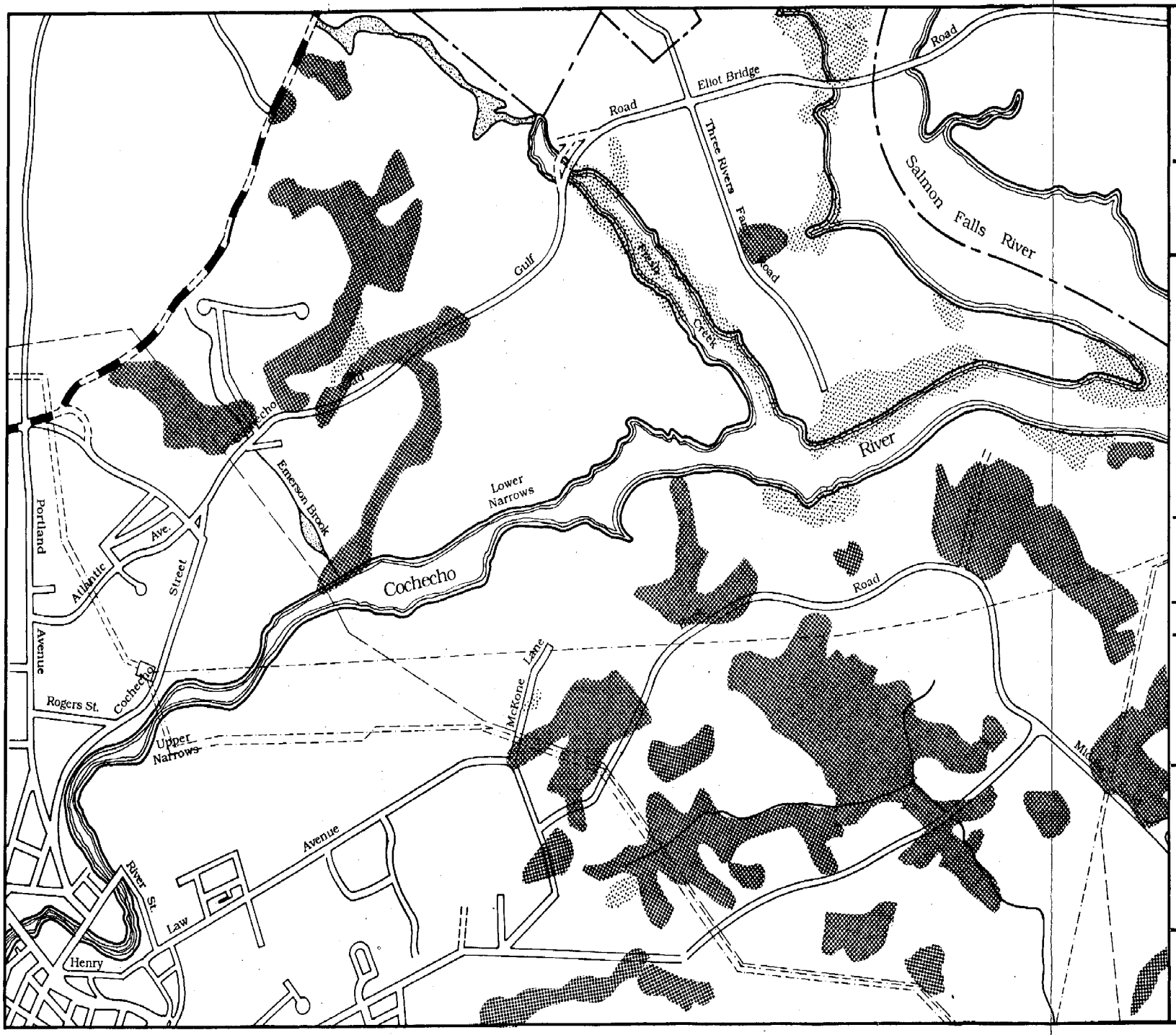
Protection of the Cochecho's wealth of natural and historic resources, as well as improvement of water quality, are high priorities. These resources are inventoried and assessed below.

Wetlands

Wetland soils, defined as very poorly drained and poorly drained soils, are subject to the provisions of the City's overlay Wetland Protection District, described previously in detail. Concerns about critical resource protection, especially tidal wetlands and the areas adjacent to Fresh Creek, were raised at the Cochecho River Harbor Management Plan kickoff meeting. Wetland soils located within the study area are inventoried below.

Wetland soils, consisting of poorly drained and very poorly drained soils, were mapped by the City of Dover as part of its 1988 Master Plan. This information, mapped at a scale of 1" = 1000', is based on the 1973 Soil Survey of Strafford County, Soil Conservation Service.

Poorly drained and very poorly drained soils identified within the study area are listed in **Table 5** below and depicted on **Map 5**. **Table 6** depicts the total number of acres of poorly drained and very poorly drained soils which occur within the study area watersheds.



Cochecho River Harbor Management Plan

Map 5
Wetland Soils

Legend

Very Poorly Drained (includes floodplain soils in some areas)

Poorly Drained

Scale 1" = 1,000'

Source:

1973 Soil Survey of Strafford County, Soil Conservation Service; 1988 Dover Master Plan.

Cambridge Systematics, Inc.

222 Third Street
Cambridge, Massachusetts 02142

IEP inc
P.O. Box 1136
39 Bow Street
Portsmouth, NH
03802-1136

Table 5
Wetland Soils
Cochecho River Study Area

Very Poorly Drained Soils

Ta	Tidal marsh
Be	Biddeford silty clay loam

Poorly Drained Soils

ScA	Scantic silt loam, 0 percent to 3 percent slopes
ScB	Scantic silt loam, 3 percent to 8 percent slopes
SwB	Swanton fine sandy loam, 3 percent to 8 percent slopes
Sb	Saugatuck loamy sand

Source: Soil Survey of Strafford County, USDA Soil Conservation Service, 1973.

Table 6
Wetland Soils
Cochecho River Study Area Watersheds

Major River Basin	Watershed	Poorly Drained Soils (Acres)	Very Poorly Drained Soils (Acres)
Cochecho	Lower Cochecho SubBasin #1	0	0
	Lower Cochecho SubBasin #2	19.0	0
	Lower Cochecho SubBasin #3	95.2	6.4
	Middle Cochecho SubBasin #2	35.2	5.5
	Emerson	14.5	0
	Fresh Creek	39.3	3.2
	TOTAL	203.2	15.1

Source: Master Plan, City of Dover, 1988.

The very poorly drained soils consist primarily of Tidal marsh located adjacent to much of Fresh Creek; along the northern and southern banks of the Cochecho River between Fresh Creek and the Cochecho's confluence with the Salmon Falls River; and several small areas adjacent to the western edge of the Salmon Falls River. Soils classified as Tidal marsh occupy tidal flats that are covered with shallow water at high tide. The surface of Tidal marsh is a brown fibrous mat of grass and grass roots with sand and silt intermixed. This land type has little or no value for farming with the best use being for wetland wildlife habitat. Tidal marsh, a very poorly drained soil, is considered part of the City's Wetland Protection District and is thus protected per the regulations of that district.

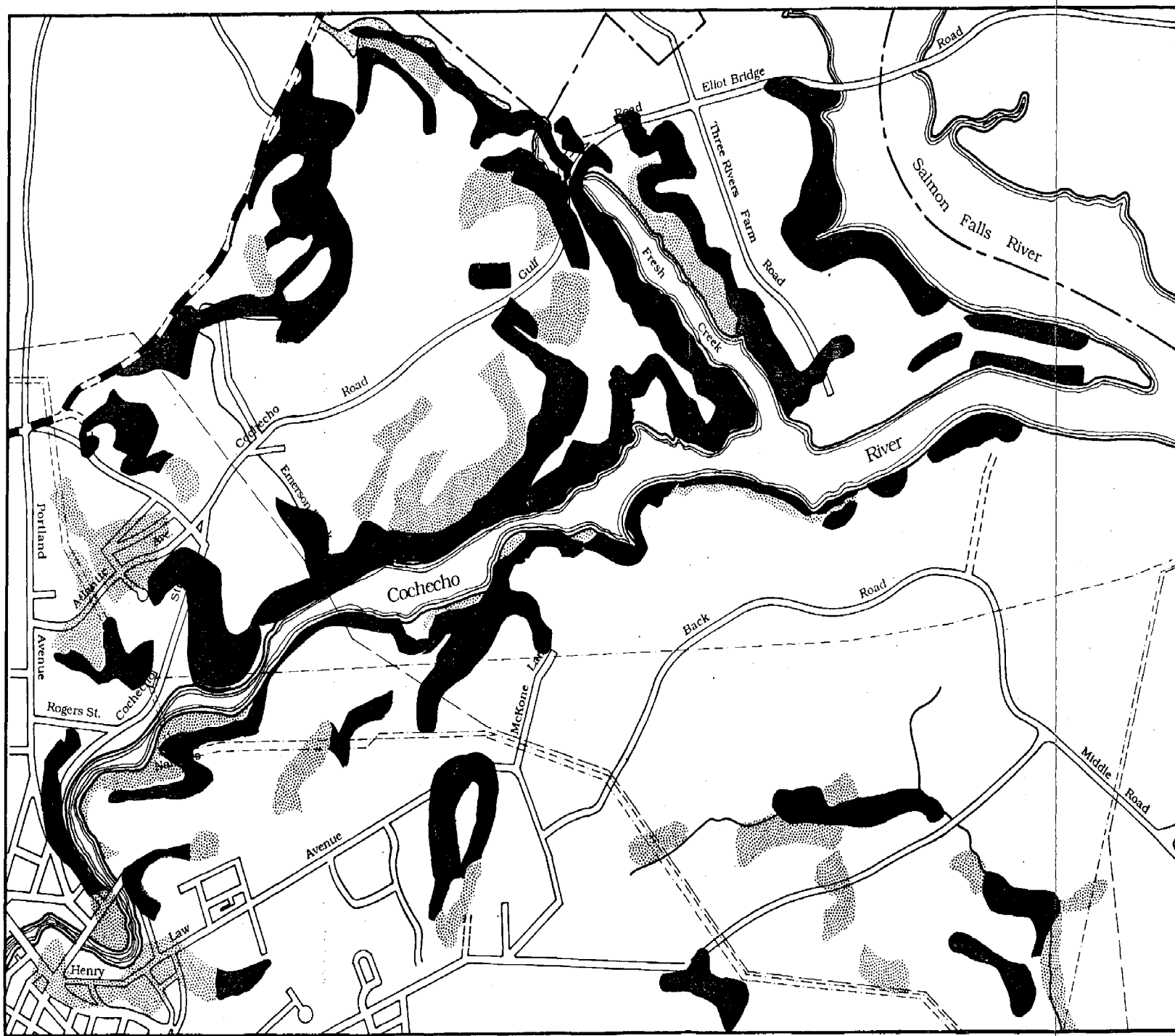
The majority of the poorly drained soils occur on the south side of the river between Lower Narrows and the Cochecho's confluence with the Salmon Falls River; and in the vicinity of Emerson Brook. There are only a few areas of poorly drained soils within the study area that are actually adjacent to the banks of the Cochecho River. All poorly drained soils found within the study area (see **Table 2** and **Map 5**) are also defined as part of the City's Wetland Protection District.

Steep Slopes

The banks of the tidal Cochecho are characterized, in general, by relatively steep slopes (greater than 15 percent) as can be seen on **Map 6**. The steepest slopes are found between Emerson Brook and the Lower Narrows. The gentlest slopes are found between Fresh Creek and the Cochecho's confluence with the Salmon Falls River.

Significant Natural Features

A land conservation inventory, contained in the 1988 *Cochecho River Open Space Plan*, highlights a number of significant natural features along the tidal Cochecho. These are presented below in **Table 7**.



Cochecho River Harbor Management Plan

Map 6 Slope

Legend

- 0 - 8%
- 8 - 15%
- Greater than 15%

Scale 1" = 1,000'

Source:

United States Geological Survey topographic map; 1988 Dover Master Plan.

Cambridge Systematics, Inc.

222 Third Street
Cambridge, Massachusetts 02142

IEP inc
P.O. Box 1136
39 Bow Street
Portsmouth, NH
03802-1136

Table 7
Land Conservation Inventory
Cochecho River Study Area
(from South to North by river mile)

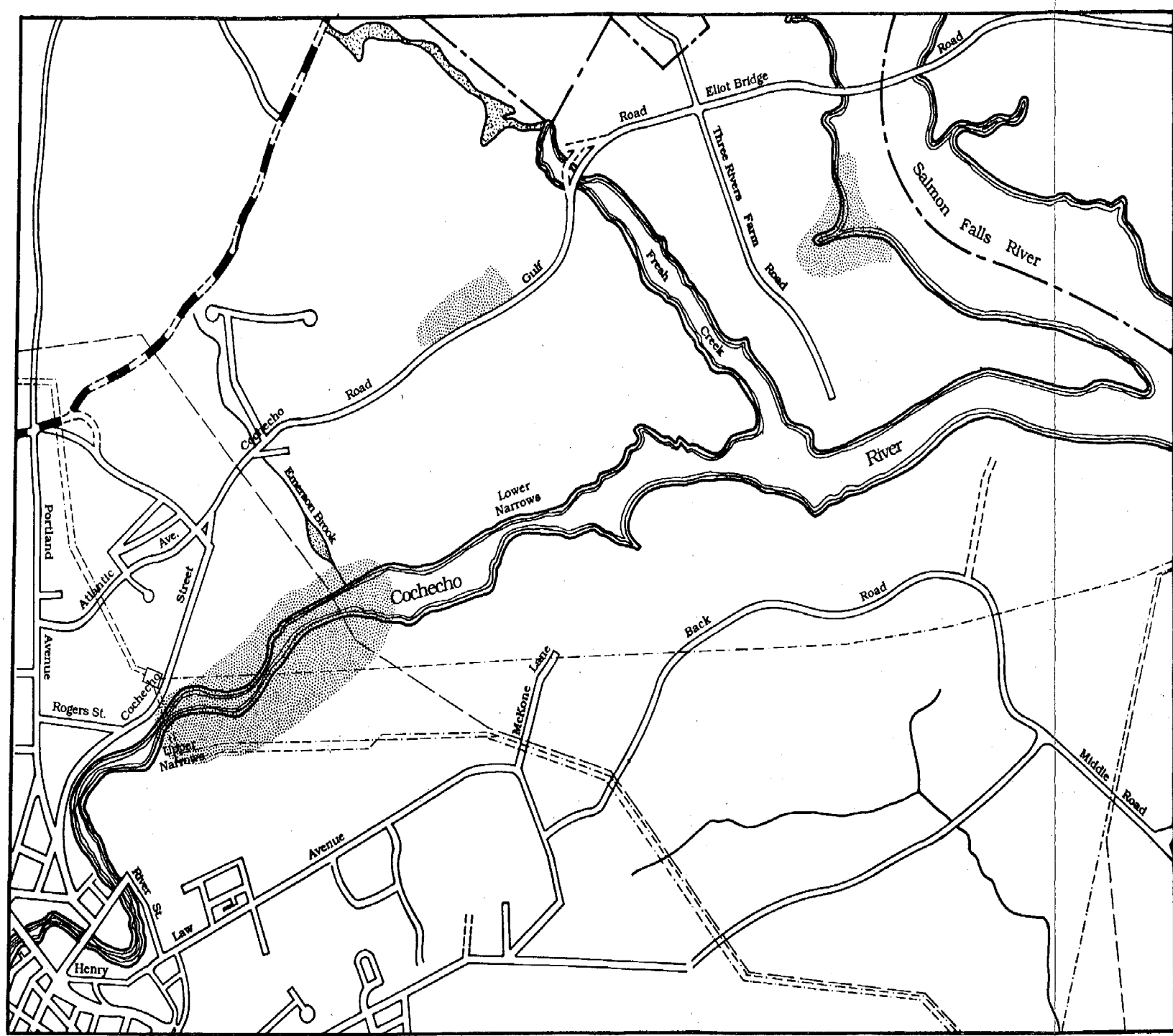
River Mile	Features	Assets/Issues
0.0	Cochecho Point & Three Rivers Farm, peninsula	Large family holdings/scenic jewel unprotected by Trust
1.0	Fresh Creek	Tidal inlet and freshwater access/Critical ecological habitat, vulnerable to upriver pollution
1.0+	Tidewater Farm	Prime agricultural soils, Georgian home/large unprotected holding
1.5	Two Tree Farms	
1.6	Lower Narrows	Rocky gorge
2.2	Emerson Brook	
2.6	Upper Narrows	Historic Campin's Rock, access to river from Cochecho Street

Source: *Cochecho River Open Space Plan*, Strafford Regional Planning Commission, June 1988.

Rare Plants, Animals, and Natural Communities

Rare plants, animals, and natural communities known to occur within the Cochecho River study area according to the N.H. Natural Heritage Inventory data base, are listed in **Table 8** and depicted on **Map 7**. Of particular concern to this study is the occurrence of rare plant, animal, and/or natural communities along the Cochecho River between Upper Narrows and Emerson Creek (see **Map 7**). According to the N.H. Natural Heritage Inventory's review, alteration of the mudflats may result in the disturbance of the rare plants found within the study area. This information should be carefully considered in the development of open space protection and recreational program planning.

It should be noted that this information is not the result of comprehensive field surveys. For this reason, the N.H. Natural Heritage Inventory cannot provide a definitive statement on the presence, absence, or status of species or natural communities in the study area. In some cases, the exact locations of these occurrences are not known. In other cases, the exact location of these occurrences are not mapped due to the sensitive nature of some of the particular plant, animal, or natural communities (elements); and it is possible for one mapped site location to represent the location for more than one element. More data on this area may become available in the future as the inventory expands with ongoing fieldwork and research.



Cochecho River Harbor Management Plan

Map 7
Rare Plants, Animals, and/or Natural Communities

Legend

Rare Plants, Animals, and/or Natural Communities

Scale 1" = 1,000'

Source:

N.H. Natural Heritage Inventory, December 28, 1989.

Cambridge Systematics, Inc.

222 Third Street
Cambridge, Massachusetts 02142

IEP inc
P.O. Box 1136
39 Bow Street
Portsmouth, NH
03802-1136

Table 8
Rare Plants, Animals, and Natural Communities Known to Occur Within the Tidal Portion of the Cochecho River

Scientific Name	Common Name	Status*
Eleocharis parvula	Small Spike-rush	ST
Isoetes engelmannii	Engelmann's Quillwort	HL
Lilaeopsis chinensis	Eastern Lilaeopsis	ST
Platanthera flava var. heriola	Pale Green Orchis	ST
Samolus parviflorus	False Water Pimpernell	ST
Sparganium eurycarpum	Large Bur-reed	ST

* ST = State Threatened
HL = Hit List (status is being closely monitored with listing as threatened a consideration)

Source: New Hampshire Natural Heritage Inventory, 28 December 1989.

Erosion

Participants at the Cochecho River Harbor Management Plan kickoff meeting indicated that erosion of the banks of the Cochecho is of concern, particularly in the area north of the Cochecho Country Club. This is attributed to several factors including boat wakes from large and small vessels (tour boats create a heavy wake), boat speed, and removal of upland vegetation. However, according to George Maglaras of George's Marina, spring ice-out and river velocity appear to be the primary causes of erosion and damage to the banks of the Cochecho. In particular, he cites that spring ice-out is responsible for damage to the granite walls along the north bank of the river near downtown. In addition, he indicates that some erosion of the north bank of the river near the public service building has occurred. The bank here consists primarily of easily erodible landfilled material. The new City

regulations which require a 100 foot setback and soil erosion and sedimentation plans, as well as limit clear cutting, are reportedly sufficient to address the land use side of the erosion issue.

Navigational Conditions

The Cochecho River has a crooked channel from the Piscataqua River to the head of navigation at the dam in downtown Dover. Depth at mean low water in the tidal Cochecho River channel varies from a minimum of 3 feet to a maximum of 10 feet along its length. In 1968, the controlling depth was 3.5 feet to a point about .5 miles below the dam. The channel is privately marked with stakes. It is advised that local knowledge be consulted prior to passing up the river through Lower Narrows and Upper Narrows. Depths of 6 feet are reported alongside the float at George's Marina.

In 1977, the Army Corps of Engineers conducted a hydrographic survey of the existing Cochecho River bottom. During 1984/1985 the City of Dover carried out a dredging project in the vicinity of the sewer treatment plant outfall and the adjacent silted-in channel. Sand, silt, and debris accumulated in this area between 1962 and 1983. This accumulation reduced the navigational characteristics of the existing channel at this bend in the river and created a large plateau, exposed at low tide, between the channel and the treatment plant. Reportedly, a large portion of this accumulation was directly attributable to the practice of dumping snow removed from the City's streets at a point near the former Washington Street bridge crossing. This practice has since been discontinued. However, according to George Maglaras of George's Marina, this area will need to be dredged again once the Sewage Treatment Plant is relocated. Through a general permit from the Army Corps of Engineers, in effect through January 1, 1993, the City has the authority to conduct maintenance dredging of the Cochecho River.

Six overhead power cables, with a minimum clearance of 34 feet, cross the Cochecho River near downtown Dover – one near the Department of Public Works facility (34 feet), one near George's Marina (35 feet), two at the Upper Narrows (34 foot and 47 foot clearance), and two just east of Upper Narrows (34 foot and 65 foot clearance)

(see **Map 2**, Section III). Concerns regarding this issue were raised at the Cochecho River Harbor Management Plan kickoff meeting. Participants indicated that there are at least four locations where these power line crossings present a hazard to navigation and, further, that these should be removed or channeled to one crossing that would meet appropriate height standards. The 35 foot powerline near George's Marina was recently raised to a reported 50 foot height.

River Water Quality

State regulations rate surface water quality according to four classifications (see **Table 9**). These classifications range from Class A, the highest water quality, to Class D, the lowest quality. (While state regulations provide for Class D, no waters in the state are so classified, nor are any currently being contemplated for such classification). In the past, the Cochecho River has been considered Class C and D due to the discharge of sewage from Farmington and Rochester. However, these two communities now have secondary sewage treatment plants and the Cochecho's water quality has been upgraded to a Class B waterway.

Table 9
State Surface Water Quality Classifications

Class A Potentially acceptable for water supply uses after disinfection. No discharge of sewage, wastes or other polluting substances into waters of this classification. (Quality uniformly excellent.)

Class B Acceptable for swimming and other recreation, fish habitat, and after adequate treatment, for use as water supplies. No disposal of sewage or wastes unless adequately treated. (High aesthetic value.)

Class C Acceptable for recreational boating, fishing, and industrial water supply with or without treatment, depending on individual requirements. (Third highest quality.)

Nonpoint and point pollutant sources can negatively impact water quality. Nonpoint sources of water pollution include waste disposal areas, erosion sites, salt piles, salted roads, agricultural runoff, urban runoff, pesticides, stormwater impoundment sites, snow dumps, surface water impoundments, and subsurface disposal concentrations. The 1988 Dover Master Plan contains a list of potential non-point pollutant sources in Dover and adjacent municipalities as well as a map of their location.

Within the study area itself, there are at least six outfalls to the Cochecho River. One of these, a four foot pipe located just west of George's Marina, collects and discharges stormwater runoff from Dover's entire north end, south of Garrison Hill and including the east side of Central Avenue. As a result of recent drainage improvements to Cochecho Street, all stormwater drains in the Cochecho Street area are tied together and discharge at this one outfall. Thus, non-point pollutants from urban runoff as well as raw sewage from some homes still tied into these collection and outfall systems, are entering the Cochecho. Each year, the Department of Public Works conducts tests in order to identify and remove raw sewage sources still connected to the stormwater collection system. If steps are not taken to address this pollutant source, water quality will continue to be negatively impacted despite relocation of the Sewage Treatment Plant.

Point sources of pollutants are regulated under the National Pollutant Discharge Elimination System (NPDES). A NPDES permit is required for any discharge of effluent from a point source into surface waters. **Table 10** lists NPDES permits issued for discharges to the Cochecho River in Dover as of 1988.

Table 10
NPDES Permits
Cochecho River, Dover N.H.
1988

Permit No.	Name	Type of Discharge	Receiving Waters
NH0000060	Clarostat Mnftg	Industrial	Cochecho River
NHG250139	Harris Graphics	Industrial	Cochecho River
NH0100064	Treatment Plant	Municipal	Cochecho River
NH100641	Strafford County Rest Home	Municipal	Cochecho River

Source: Master Plan, City of Dover, 1988.

Fish and Shellfish Resources

The Cochecho River is part of the Great Bay estuarine system, one of the largest on the eastern seaboard. Covering approximately 17 square miles, it is formed by the convergence of the Salmon Falls, Cochecho, Bellamy, Oyster, Lamprey, Squamscott, and Winnicut Rivers.

The Cochecho River does not support any commercial fishing interests. Recreational fishing survey data, specifically for Cochecho River landings and species distribution, is not available.

In 1980 and 1981, the New Hampshire Fish and Game Department inventoried the natural resources of the Great Bay estuarine system. The N.H. Fish and Game inventory identified a major clam bed, one of the few within the Great Bay estuary, on the Cochecho River at its confluence with the Salmon Falls River. No other shellfish concentrations were identified within the Cochecho River study area. Pursuant to NH RSA 149:3-IVb, tidal waters used for growing or taking shellfish for human consumption shall satisfy all conditions for Class B waters (NH RSA 149:3-

II) and not contain a coliform bacteria count greater than 70 on an MPN (Most Probable Number) basis. Because the Cochecho River does not meet this water quality standard, this shellfish bed is officially closed by the state to shellfishing.

The N.H. Fish and Game inventory also included sampling at numerous locations within the Great Bay estuary to determine finfish populations and distribution. Almost all 52 species of finfish found in the estuary were identified at the sampling locations on Dover's rivers. Some species were more prevalent at certain locations. One finfish sampling location was located on the Cochecho River above Fresh Creek. The species found to be most prevalent on the Cochecho River were Atlantic tomcod, Rainbow smelt, River herring, Common killifish, Smooth flounder, and White perch.

N.H. Fish and Game conducts the following management or monitoring programs in the Cochecho River:

- annually releases 200 to 300 adult Shad;
- annually releases 100,000 Atlantic Salmon fry;
- monitors naturally reproducing Alewives; and
- monitors naturally reproducing Smelt.

In the spring of 1989, an Atlantic salmon fry stocking program was begun with the release of fry into the Cochecho River. The area will be examined in the fall of 1989 to determine survival of the fry. 190 adult American shad were released into the Cochecho River in the spring of 1988 in an effort to produce a fishery with self-sustaining runs. While only four shad were observed returning to the Cochecho, numbers of returning fish may be greatly underestimated since observations could only be done three times daily.

According to N.H. Fish and Game, the most immediate and increasing threat to the survival of downstream migrating juvenile river herring is the turbines of low-head hydroelectric generators. The start of a hydroelectric dam in 1983 spared few fish in the Cochecho River, according to N.H. Fish and Game. Although a fishway

was in place, the fish were falsely attracted to the high water flows of the tail race rather than the fishway where flows were lower. In the spring of 1988, the number of adult returning river herring was estimated at 3,915, based on a series of timed counts as they passed through the fishway over the dam in downtown Dover. In 1989, high spring water levels were diverted to the fishway and more fish were able to find it. In this one year, an estimated 18,455 river herring returned to the Cochecho, more than were able to spawn than in the total six years prior.

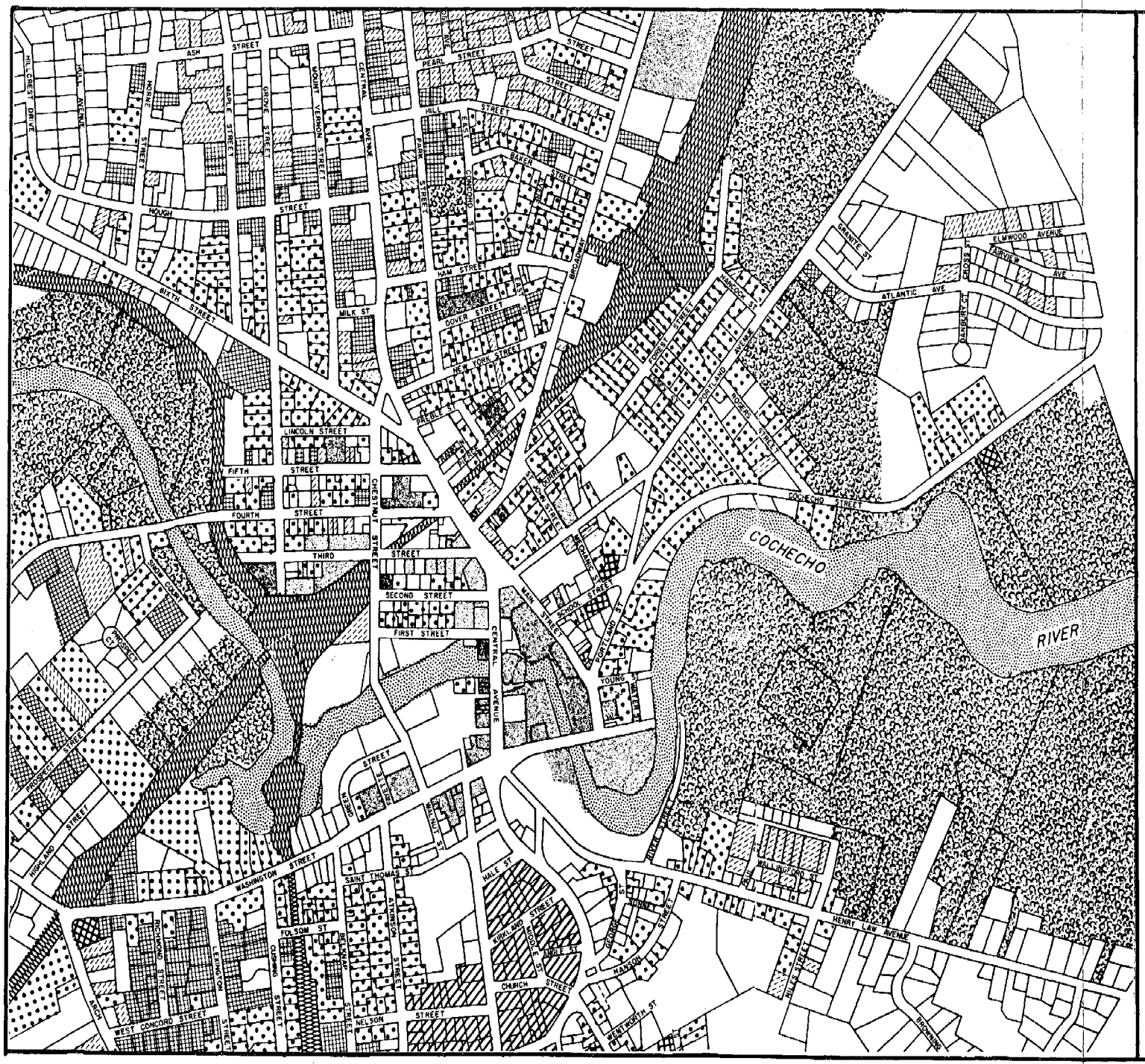
Historic and Cultural Resources

Historic structures and sites within the Cochecho river study area are part of the legacy shaped by early shipping, manufacturing and agricultural industries along the Cochecho. Connected to Portsmouth Harbor and the Atlantic Ocean via the Piscataqua River, the Cochecho River's historically significant features provide important links to the City's past.

Historic resources within the study area were mapped by the Dover Historic District Commission as part of the City's 1988 Master Plan (see **Map 8a and 8b**). A number of historic resources are depicted on parcels adjacent to the river's northern bank between the river and Portland and Cochecho Streets. Moving from downtown toward the mouth of the Cochecho River, historic resources identified include:

- a number of industrialization and civil war period (1820-1870) structures;
- one significant brick structure (the Public Service building); and
- one post-revolutionary federal period structure (single family home).

There are no historic resources adjacent to the south side of the Cochecho within the urban core portion of the study area. Historic resources mapped within the more rural portion of the study area consist of two significant historic structures located adjacent to the Cochecho River's northern bank at the end of Three Rivers Farm Road.



Map 8a
Historic and Cultural Resources, Urban Core Portion of Study Area

Source:

Dover Master Plan, 1988. Prepared from a windshield survey by the Dover Historic District Commission.

HISTORIC RESOURCES

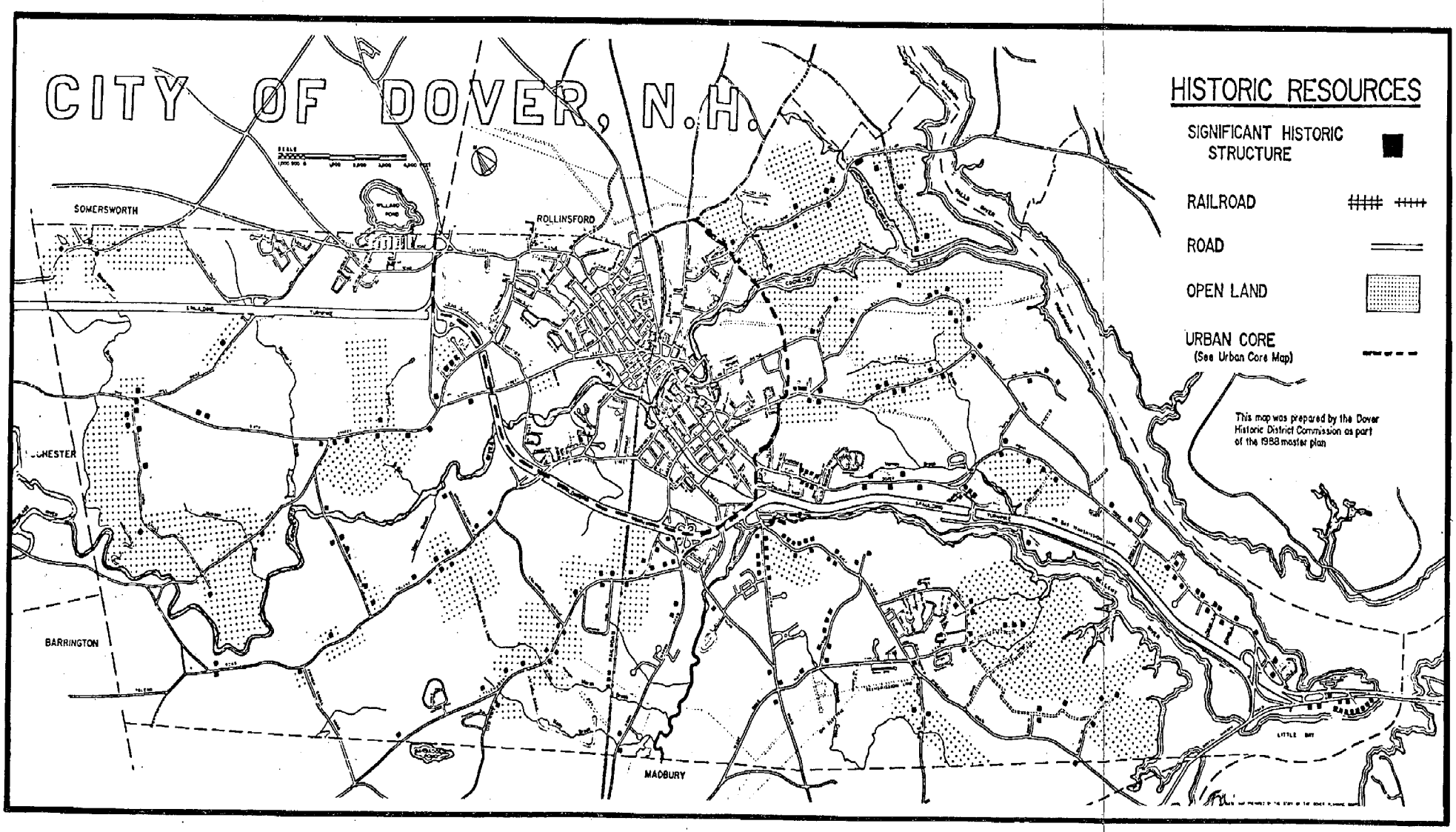
ARCHITECTURAL PERIOD OF CONSTRUCTION

- POST-REVOLUTIONARY FEDERAL PERIOD 1775 - 1820
- INDUSTRIALIZATION & CIVIL WAR 1820 - 1870
- POST CIVIL WAR VICTORIAN ERA 1870 - 1910
- EARLY 20th CENTURY 1910 - 1940
- SIGNIFICANT BRICK STRUCTURES
- DETAILED SURVEY AREA
- RAILROAD
- WOODLAND/OPEN LAND
- WATER

Map 8b
Historic and Cultural Features, Rural Portion of Study Area

Source:

Dover Master Plan, 1988.



Local Population and Development Trends

Dover is part of a regional economy, encompassing the N.H. portion of the Portsmouth-Dover-Rochester metropolitan statistical area. This regional economy, has been experiencing rapid expansion over the last eight years as evidenced by a 14 percent increase in population; 10,500 (+16.5 percent) new jobs; and 10,500 (+ 20 percent) new housing units.

These regional growth trends are paralleled by the City of Dover. Between 1980 and 1987, Dover's population grew from 22,377 to 26,100 (+ 16.6 percent); and an estimated 3,700 new housing units were constructed. Employment growth within the City has been strong as well, with an average of 400 new jobs per year over this period.

According to the City's 1988 Master Plan, future employment growth within the City is projected to be strong, with an average of 633 new jobs each year to 1995. Likewise, the City's population is projected to increase approximately 21.6 percent to 31,718 people by 1995; and an additional 14,349 housing units are projected to be built over the same period, an increase of 38.3 percent.

City-wide growth for the 1987-1995 period is projected to translate into the consumption of an additional 50 to 70 acres of industrial land, 200 to 260 acres of land for office use, 35 to 60 acres of land devoted to retail use, and 950 to 1,450 acres to accommodate housing growth. In total, these land uses are expected to consume 1,235 to 1,840 acres.

According to the City's 1988 Master Plan, the southeastern quadrant of the City (south of the study area and directly south of the Bellamy River) continues to absorb the bulk of new housing growth and population as well as the bulk of proposed new housing units (this area has the best access to the Spaulding Turnpike).

Recent population and development trends within the region and City of Dover have implications for the future use of land and water along the tidal Cochecho.

Dover has devoted substantial resources to revitalizing and redeveloping its Central Business District over the last two decades. As a result, the Pacific Mills complex, which remained vacant and underutilized for many years, is being renovated and occupied for office space. These redevelopment efforts have laid the foundation for implementing the City's goal of utilizing the significant waterfront potential represented by the Cochecho River's presence in the downtown area. While the City has not yet implemented its waterfront development goals, projected local and regional growth trends support the potential for this opportunity.

To date, little development has occurred within the rural portion of the Cochecho River study area to the east of downtown Dover. However, future development of this area has implications for both land-based and water-based activities. As already indicated, it is projected that the City's southeastern quadrant is likely to experience the most significant residential growth over the next six years. However, a 146 unit cluster subdivision (duplexes on 76 lots) was recently approved by the City west of McKone Lane between Henry Law Avenue and the Cochecho. Subdivision plans call for the area adjacent to the river to be preserved as open space. A 9 lot subdivision, located directly across the river, was also approved. In addition, directly to the east of the 146 unit cluster subdivision, 3 residential lots have been approved immediately adjacent to the river.

City-wide, Dover is projected to experience continued population and housing growth. As more accessible areas are developed, pressure to develop land along the scenic Cochecho will increase. Future residential development along the banks of the rural, relatively undeveloped portion of the Cochecho will impact water-based and land-based activities. Specifically, acquisition of land or easements for trails or river access will become more expensive and difficult as pressure to develop land adjacent to the Cochecho increases; wildlife habitat may be lost; scenic views may be negatively impacted for both land-based uses (hiking) and water-based uses (boating); and new construction may lead to increased erosion and sedimentation. Yet, as the City's population grows, the need for additional recreational facilities such as boating access and river-side hiking trails and parks will increase.

Public Facilities

Introduction

The availability of infrastructure, particularly sewer, water, streets and parking facilities, has a number of implications for the future utilization of the Cochecho River resource. For example, the availability of infrastructure will affect the location, type, and even the quality of future development. Below, is an overview of existing infrastructure within the study area as well as proposed improvements as identified in the City's 1988 Master Plan and the 1984 Pacific Mills Master Plan.

Sewer

Sewer service is provided to the portion of the study area located in the City's downtown. Beyond this, sewer service in the study area is limited to an 8 inch line on Henry Law Avenue which ends approximately 250 feet east of Tennyson Avenue; and an 8 inch line which extends approximately 1000 feet east of Rogers Road on Cochecho Street.

Dover's primary Sewage Treatment Plant, located within the study area at the end of River Street on the south bank of the Cochecho River, began operation in 1968. The plant provides grit removal, primary sedimentation, and gaseous chlorination of wastewater flow. It can treat an average flow of 3.2 million gallons per day and may treat a peak of up to 7.7 million gallons per day at a much lower efficiency rate for very limited periods of time. Flows larger than 7.7 million gallons per day are bypassed directly into the Cochecho River. The average flow to the plant during 1989 was 2.61 million gallons per day.

The City has developed plans for a new secondary treatment facility to be located at the Huckleberry Hill site off Middle Road. It is anticipated that construction will begin in 1989 with the facility in operation by 1992. The average daily flow capacity of the new plant will be 4.7 million gallons with a maximum 24 hour flow of 13.8 million gallons per day and a peak hour flow of 16.8 million gallons per day. The

plant was designed to meet sewage flows through the year 2005 based on population projections from the N.H. Office of State Planning. Projections were also developed to the year 2020 based on the higher rate of growth anticipated by the Dover Planning Department.

The construction of an upgraded sewage treatment facility on a new site is likely to result in improved water quality in the Cochecho. Thus, it represents a step towards improving fish habitat and recreational fishing and shellfishing opportunities. Comments made by participants at the Cochecho River Harbor Management Plan kickoff meeting support this contention. Specifically, participants indicated that pollution currently released by the Sewage Treatment Plant is killing off tideland vegetation which provides for wildlife habitat and shoreline erosion protection; once the plant is closed this vegetation is likely to return.

Relocation of the plant, (along with the Department of Public Works facility) will also make this site available for future water dependent and water-related uses such as a marina, boat access, and recreational facilities. Such improvements are likely to have a positive effect on property values in the area as well as creating a more aesthetically desirable landscape from both a water use and land use perspective.

The increased capacity of the new sewage treatment plant will enable the City to support increased residential and non-residential growth. The City does not currently have plans to expand sewer service in the study area. However, portions of the rural Cochecho study area, such as the new 146-lot duplex subdivision near McKone Lane, are already sewered.

Generally speaking, future sewer service expansion into the rural portion of the Cochecho study area would be likely to intensify the pressure to develop areas adjacent to the tidal Cochecho. Associated increases in property values in proximity to new sewer lines would further hasten new development. Careful management and regulation of new development along the Cochecho will be required in order to minimize negative impacts to the river such as the loss of wildlife habitat, scenic

views and open spaces, and increased erosion and runoff caused by site development and the associated disturbance of land and removal of ground cover.

Overboard Discharge from Pleasure Boats

By federal law, boaters are only allowed to discharge on board wastes at sea. There is no data available regarding the frequency with which overboard discharges from pleasure boats take place in the Cochecho River. Nor is there any data concerning the water quality impacts of those discharges. However, there is currently no pump-out facility to serve pleasure boats using the Cochecho River. In fact, the closest facility is located at the Wentworth Marina in New Castle. The U.S. Coast Guard is the only agency with enforcement authority regarding overboard discharges and the agency's limited resources make enforcement of overboard discharge regulations a relatively low priority.

Assuming that boaters would utilize a conveniently located pump-out facility, it may ultimately be cost effective to provide such a facility at or near the present marina on the Cochecho. The convenience and relative affordability of such a facility are important factors due to the lack of adequate enforcement regarding overboard discharge violations. The need for such a facility would be further highlighted if existing marina facilities are expanded and the number of recreational boaters increases.

Participants at the Cochecho River Harbor Management Plan kickoff meeting indicated that even with the relocation of the Sewage Treatment Plant downstream, water quality could still be a problem if boaters continue the practice of overboard discharge. However, while overboard discharges may be negatively impacting water quality, upstream discharges to the river permitted under NPDES, as well as non-point pollutant sources such as stormwater runoff, may have a more significant impact.

Water

Municipal water service is provided to the City's downtown area. Service beyond downtown to the study area is limited to a 6 inch line on Cochecho Street which ends approximately 1,000 feet from Cochecho Street's intersection with Gulf Road; a 6 inch line on Gulf Road which ends at Country Club Estates Drive; a combination of 6 inch, 4 inch, and 12 inch mains on Henry Law Avenue which run from downtown Dover to McKone Lane; and a 16 inch line which runs the length of Middle Road.

The City's seven wells provide a total safe yield of 3,506,400 gallons per minute and a maximum yield of 4,536,000 gallons per minute. During 1988, average consumption was 2,561,958 gallons per day; maximum consumption was 3,763,000 gallons per day.

Water demand projections indicate that the existing maximum safe yield of 3,506,400 gallons daily, and maximum yield of 4,563,000, will barely be adequate to supply the City through the year 1995. The current available resources are not adequate to meet the City's projected need for the year 2000 of 3,543,632 gallons of daily safe yield capacity and a potential maximum demand capacity of 4,890,212 gallons daily. The City is in the process of researching additional water supply sources.

The availability of adequate water supplies will play a role in the development of Dover's downtown waterfront. While redevelopment efforts will likely focus on retail, office, and residential development rather than water intensive industries, new development will need to be supported by an adequate water supply.

The future availability of municipal water also has implications for the rural portion of the study area. At present, the City does not have plans to expand the water distribution system to areas adjacent to the rural Cochecho. However, should the City extend service to this area in the future, more intensive residential development would be likely to occur.

Parking

According to the Pacific Mills Master Plan, the total number of parking spaces available for Dover's Central Business District is inadequate. Further, the study indicates that intensification of use or redevelopment of vacant parcels will only worsen the problem. The plan highlighted a number of recommendations for parking improvements, including:

- engineering feasibility study to be undertaken for future construction of parking deck over First Street parking lot (Pacific Mills Master Plan Recommendation #1) (completed);

- increase parking by providing angle parking on First Street - increase by 35 spaces (Pacific Mills Master Plan Recommendation #2) (completed);

- evaluate need for future parking structure on Strafford Bank parking lot (Pacific Mills Master Plan Recommendation #5);

- remove steam plant; construct parking garage for 400 cars (Pacific Mills Master Plan Recommendation #7) (not completed);

- construct 80 car parking lot (study parking deck feasibility) (Pacific Mills Master Plan Recommendation #9) (not completed); and

- parking to support waterfront use (in the triangle between Portland Street and Portland Avenue) (Pacific Mills Master Plan Recommendation #13) (not completed).

This last recommendation is of particular interest. According to the Pacific Mills Master Plan, because of the limited land area of most of the waterfront parcels, parking is a problem. Further, an opportunity exists to address this problem, in part, by developing a 50 car public parking area on the City-owned parcel of land which

lies between Portland Street and Portland Avenue. The plan points out that while its location is not ideal because of its distance from the waterfront and the need to cross a major street, it would help to support waterfront uses which could not provide the desired number of on-site parking spaces.

While some of the recommendations cited above have been implemented, thus creating additional parking facilities in Dover's Central Business District, parking facilities are still inadequate. As indicated in the Pacific Mills Master Plan, future parking needs are dependent upon how intensively this land is developed, with more intensive development requiring higher parking demand. The availability of adequate parking is critical to the development and revitalization of the Cochecho Waterfront District in the City's downtown area.

Streets

There are few roads that provide direct access to the Cochecho River within the rural, relatively undeveloped portion of the study area – Gulf Road, to the river's north, and Back Road, to its south, parallel the tidal Cochecho. McKone Lane, near the Lower Narrows, and Three Rivers Farm Road, which parallels Fresh Creek, are the only roads which cut in toward the Cochecho from these roads. As a result, very little development has taken place in the area which lies between Gulf Road and the river and Back Road and the river. A corridor approximately 2,000 feet in width on either side of the Cochecho, remains relatively undeveloped.

As already indicated, much of the rural portion of the study area is held by large landowners. However, the intrusion of subdivision roads into this relatively undeveloped area remains a distinct possibility as evidenced by the recently approved 146 lot and 3 lot subdivisions west of McKone Lane and the 9 lot subdivision just east of the Public Service building. In addition to precluding development of this area, the lack of an existing road network has also limited public access to the Cochecho.

Improving access to the downtown portion of the study area will play an important role in developing the Cochecho waterfront for residential, non-residential, and recreational uses. Participants at the Cochecho River Harbor Management Plan kickoff meeting raised this issue, indicating that infrastructure improvements, such as the widening of Cochecho Street, would attract more use of the river. The Pacific Mills Master Plan highlighted a number of street improvement recommendations, including:

- reconstruct School and Mechanic Streets (Pacific Mills Master Plan Recommendation #12) (completed);

- reconstruct Cochecho/Portland Street intersection (Pacific Mills Master Plan Recommendation #14) (not completed);

- reconstruct Cochecho Street including drainage improvements (Pacific Mills Master Plan Recommendation #16) (drainage improvements completed; street will be reconstructed in 1990);

- reconstruct Portland Street from Main Street to School Street (Pacific Mills Master Plan Recommendation #20) (not completed); and

- construct new Washington Street Bridge across Cochecho River/improve approaches (Pacific Mills Master Plan Recommendation #21) (not completed).

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SECTION VI

Uniform Aids to Navigation

Section VI
Uniform Aids to Navigation

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Section VI
Uniform Aids to Navigation

Introduction

A variety of official and unofficial navigational aids currently guide mariners through New Hampshire's major tidal waters. In some areas, there are no navigational aids. Under a separate contract, the firm Holden Engineering is completing a statewide study to assess the physical conditions of tidal channels and related natural resources, and to develop a series of navigation markers, in order to provide free and easy access, and to allow for the safe movement of vessels. While the navigational mapping project will identify site specific locations for navigational aids, this section provides an overview of the desirability of creating a uniform navigational aids system for New Hampshire's major tidal waters.

Rationale for Aids to Navigation

It is the purpose of an aid to navigation to provide mariners with a means to determine their position relative to land features and isolated or submerged features, and to assist them in following natural and improved channels. In *Marine Aids to Navigation Selection and Design*, the United States Coast Guard indicates that each navigational aid should:

- be justified in terms of public benefit to be derived;
- provide a uniform, simple method of identification and distinction of one aid from another;
- be reliable; and
- be passive (is only informative, and does not require an action).

Further, the report states that an aid to navigation is only a "tool" of the mariner, as the name "aid" implies. The aids, and precautionary notes pertaining to them,

make certain valuable information available to the mariner. The interpretation and use of the information are left to the discretion of the mariner. An aid to navigation by itself does not provide a mariner with all the information she/he needs. Proper use of a system of aids to navigation requires that the mariner seek additional information about the aid as well as its location and purpose by consulting up-to-date charts and sources such as the Notice-to-Mariners.

U.S. Coast Guard and State Agreements

The United States Coast Guard (USCG) places, operates and maintains some 44,000 aids to navigation nation-wide and is the sole provider of navigational aids in most states. However, there are some states, most notably Wisconsin, New York, California and Maine, which have signed state agreements with the USCG enabling them to place and maintain their own aids to navigation. State aids to navigation systems must be reviewed by the USCG and conform with the United States navigational system before a state agreement is signed. In addition, some cities and towns have also entered into agreements with the USCG to place aids. For example, the Town of Chatham, Massachusetts maintains approximately sixty aids, while a coastal town in New York state maintains roughly three hundred.

The USCG will, in some special cases, enter into an agreement with a private party to place and maintain navigational aids. This is the case on the Cochecho River where George Maglaras of George's Marina has a private permit from the USCG to place and maintain aids on the Cochecho River.

Although the USCG "allows" placement of aids by second parties through a permit system, the USCG never fully relinquishes its statutory authority over all aids. This means that the USCG has the authority to rescind or modify any agreement at any time.

Alterations to navigational aids systems must be mapped on a navigational chart and published in the Federal Register. Any time an aid is to be changed or altered the USCG must be informed in writing, 30 days in advance.

Existing Aids to Navigation Systems

There are approximately 160 aids to navigation in the six rivers and two bays that comprise the tributaries of the Piscataqua River and Great Bay (see **Map 9**). Twenty-three of these are placed and actively maintained by the USCG.

Cochecho River

In the Cochecho River, George Maglaras of George's Marina, is permitted by the USCG to place and maintain aids to navigation. The Cochecho supports approximately thirty-two aids to navigation. The design of the aids are unique to the river and do not follow any standard design. The locations of these aids are depicted on **Map 10**.

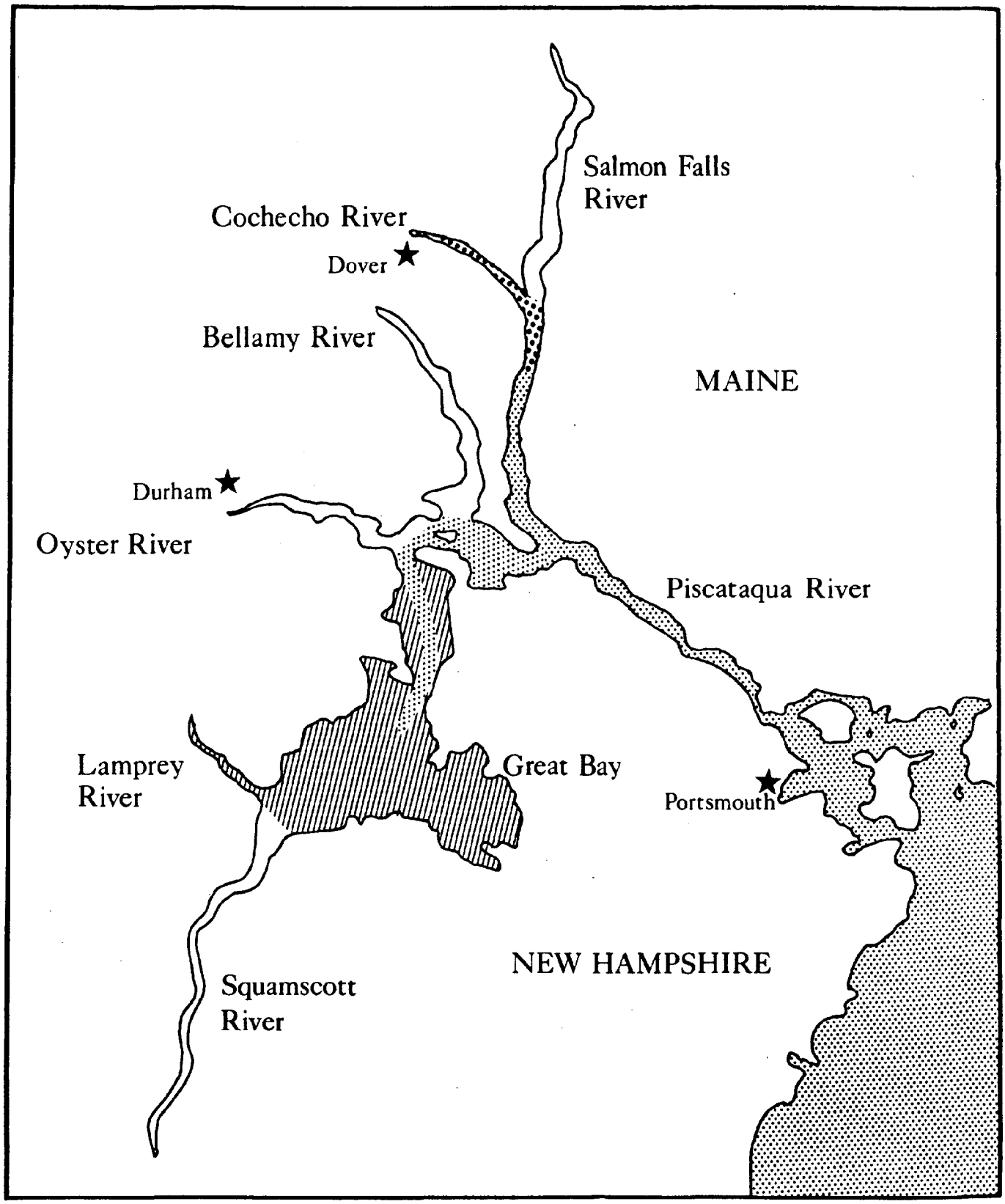
Great Bay and Little Bay

There are approximately ten to fifteen "unofficial" markers and six officially permitted aids in Great Bay and Little Bay. Four of the officially permitted aids are located near Fox Point, while two are in Great Bay.

At low tide, some sections of the channel are only five feet deep. However, vessels up to forty feet in length maneuver within the channel. Thus, these aids provide a very important guide to vessels.

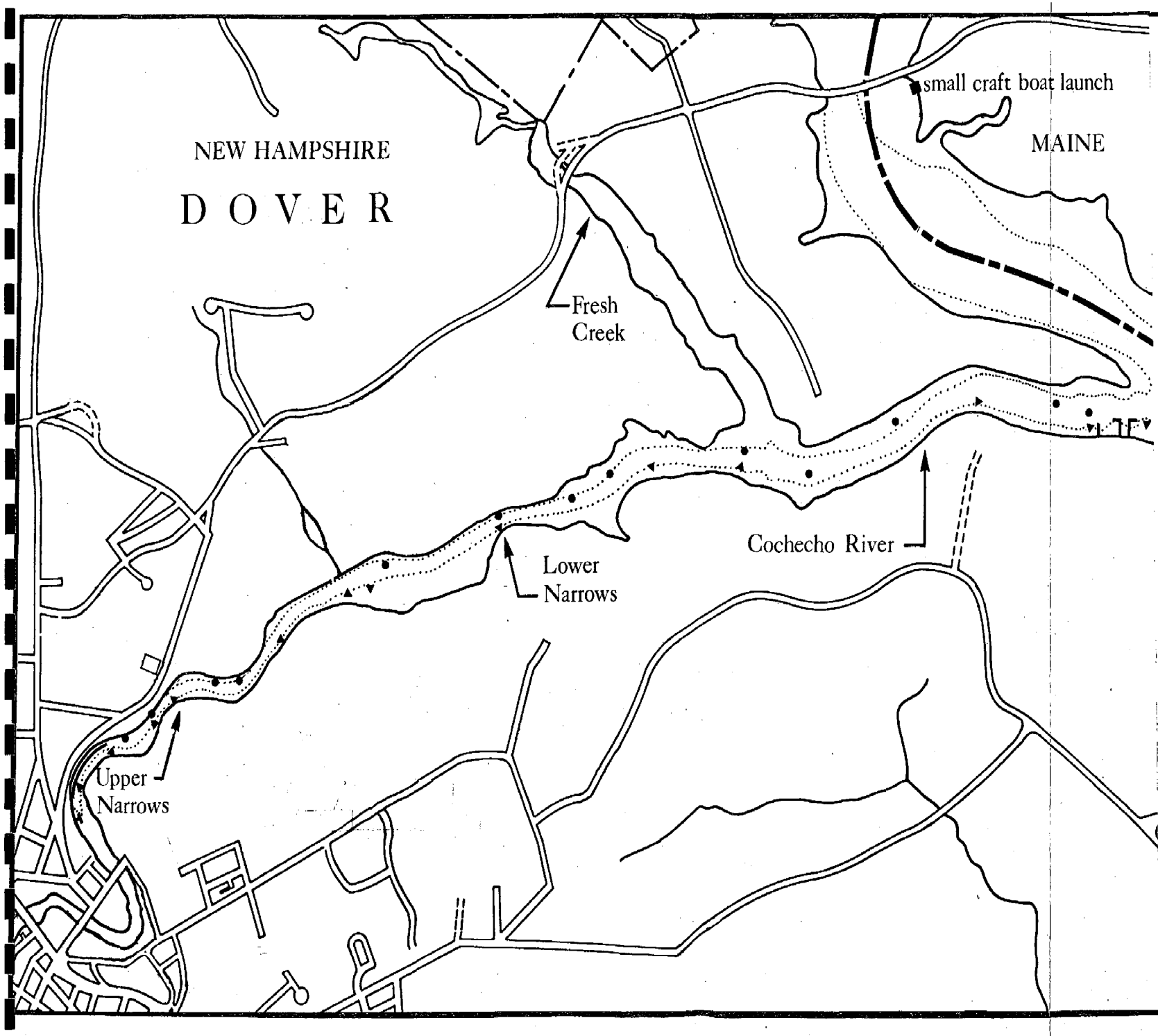
Piscataqua River

The USCG places and maintains the aids to navigation in the Piscataqua River from its mouth upstream to a point past the entrance of the Sturgeon Creek tributary. Under a private permit from the USCG, George Maglaras of George's Marina in Dover maintains three additional aids between the Sturgeon Creek (Eliot, Maine) tributary and the Cochecho River.



Map 9
Aids to Navigation

- No Aids to Navigation
- Aids to Navigation Placed by US Coast Guard
- Private Aids Placed by US Coast Guard Permit
- Unofficial Aids to Navigation (no permit)



Cochecho River Harbor Management Plan

Map 10
Existing Aids to Navigation, Cochecho River

Legend

- ● ▲ Existing Aids to Navigation
- T Existing Docks
- Mud Flats

Scale 1" = 1,000'

Source:

George Maglaras, George's Marina, Dover, NH.

Cambridge Systematics, Inc.

222 Third Street
Cambridge, Massachusetts 02142

IEP inc
P.O. Box 1136
39 Bow Street
Portsmouth, NH
03802-1136

Salmon Falls River

There are no aids to navigation on the Salmon Falls River. The majority of this river is under the State of Maine's jurisdiction.

Bellamy River

There are no aids to navigation located on the Bellamy River. The majority of river users are small, shallow draft sailcraft such as sunfish and wind surfers, which do not necessarily require navigational aids.

Oyster River

There are no aids to navigation on the Oyster River. The river supports no marinas or commercial facilities, however there is a small public wharf located in Durham.

Lamprey River

Currently, the Lamprey River supports some unofficial navigational aids. The 1989 Lamprey River Harbor Management Plan proposed that 28 navigational aids be placed on the River.

Squamscott River

There are no aids to navigation on the Squamscott River nor are there any marinas or commercial boating facilities. A railroad bridge near the mouth of the river acts to restrict the free flow of traffic into or out of the river.

Summary

Below is a summary of key findings:

- Aids to navigation are important to the mariner for navigation and safety.
- Any system of navigational aids should be uniform in nature.
- A uniform aids to navigation system would provide for safer navigation on New Hampshire's major tidal waters for both recreation and commerce.
- Agencies or individuals responsible for the placement of aids should have the proper resources and staff available to place and maintain navigational aids on an annual basis, as the reliability of the aids system is essential.
- Aids to navigation are needed throughout the navigable waters of the state.
- The USCG places aids to navigation in only certain portions of New Hampshire's navigable waters.
- The USCG does not place or maintain any aids in the state's smaller tidal rivers.

Recommendations

The following recommendations are proposed for the tidal waters of New Hampshire:

- A system of navigational aids should be designed and installed within the navigable waters of the State of New Hampshire. The system of aids should be uniform in nature and, to the greatest extent possible, be of a design similar to existing federal navigational aids.

- Uniform aids to navigation are needed in the following locations:

    - Along the coastal waters of the state;
    - within Portsmouth Harbor;
    - Along the Piscataqua River north to its limits with the Salmon Falls River;
    - The full length of the tidal Cochecho River;
    - Portions of Great Bay; and
    - Along the length of the tidal Lamprey River.

- Navigational aids are not required for the Bellamy River, the Oyster River, or the Squamscott River at this point in time.

- The N.H. Port Authority should coordinate efforts with the U.S. Coast Guard; and take steps to sign a State Agreement with the U.S. Coast Guard to enable the N.H. Port Authority to place, operate, and maintain the needed aids to navigation within the navigable waters of the State of New Hampshire.

- Navigational aids need to be mapped and their locations published in the Federal Register, announced in the "Local Notice-to-Mariners," and mapped on the official federal National Ocean Service Nautical Charts.

- The funds to place and maintain these aids should be raised through registration and/or boating use fees.

- The N.H. Port Authority should increase its staffing of Harbormasters in order to assist in the placement, operation, and maintenance of aids to navigation.

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SECTION VII

Leasing of Submerged Tidal Lands

Section VII
Leasing of Submerged Tidal Lands

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Appendix A Land Valuation Methods

Appendix B Survey of State Submerged Lands Leasing Policies, 5th Annual Submerged Lands Conference

Section VII
Leasing of Submerged Tidal Lands

Introduction

Receipt of compensation by coastal states for tidal and submerged lands is a well established practice. Common law principles underlying public interests in tidal water resources date to the Magna Carta and were well established in early English and Colonial law.

States which currently have submerged land leasing systems include:

- Alaska
- Alabama
- California
- Delaware
- Florida
- Georgia
- Hawaii
- New York
- Idaho
- Illinois
- Louisiana
- Maine
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- New Jersey
- North Carolina
- Oregon
- Pennsylvania
- Texas
- Virginia
- Washington

British Columbia, Ontario, Quebec, and Saskatchewan have submerged lands leasing systems as well.

The State of New Hampshire does not currently have a submerged lands leasing policy.* In 1989, the legislature passed House Bill 693-FN which directs the N.H. Office of State Planning to conduct a study to determine criteria and policy for leasing of submerged lands. The areas the study is to address include:

- adequacy of lease fee schedules to yield a fair rate of return for the state for the private use of submerged tidal lands; and

- impact of leasing policies on commercial and recreational user access.

Issues similar to these, including current policies and key issues in the State of Maine, the rationale for leasing fees in other states, and the potential impacts of leasing policies on New Hampshire's commercial fishing industry, are considered below as part of the Cochecho River Harbor Management Plan.

* Commercial aquaculture activities, however, must obtain a license from N.H. Fish and Game and pay a nominal application fee pursuant to N.H. RSA 211:62-e.

Leasing of Submerged Lands in Maine

Recent Policy Studies

New Hampshire's current initiative to analyze submerged land issues closely parallels recent, similar efforts in Maine. Thus, the following discussion focuses on Maine's Submerged Lands Act and the findings of Maine's *Submerged Lands Study* (January 1989).

In Maine, the Bureau of Public Lands, Department of Conservation is responsible for submerged land leases and easements and protecting public access and public trust rights on submerged lands. This authority is granted under the 1975 Submerged Lands Act (Title 12 Maine RSA Section 558).

Recent growth in demand for submerged lands due to increased coastal development prompted the legislature to consider amendments to this legislation. In 1988, the Maine legislature directed the Bureau of Public Lands, Department of Conservation to study a number of issues related to the leasing of submerged lands, including:

- the adequacy of current lease fee schedules to yield a fair rate of return for the State for the private use of submerged state lands;
- the impact of current leasing policies on public access to the waters of the State, including access by commercial and recreational users; and
- the impact of current leasing policies on the commercial fishing industry, including the shore-based services and facilities on which the industry depends.

The key findings of Maine's *Submerged Lands Study* (January 1989) included:

- Current lease fees do not return fair market value to the State, nor are they adequate to cover the cost of a submerged lands management program.

- Public access and other public benefits such as fish piers, boat ramps, and other facilities that are in keeping with the doctrine of public trust should be required as conditions of submerged land leases. In the future, funds generated by the program may exceed program needs and may then be used to provide additional compensatory public benefits.

- The commercial fishing industry can be adversely affected by some types of coastal development and competing uses. New policies and statutory authority to deny leases are needed to ensure continued protection for the fishing industry and its supporting infrastructure.

These findings served as the basis for 1989 amendments to Maine's Submerged Lands Act. Maine's current submerged lands leasing policy is described below.

Current Policy

Under Maine's recently amended Submerged Lands Act, the state has the authority to lease the right to dredge, fill or erect permanent causeways, bridges, marinas, wharves, docks, pilings, moorings or other permanent structures on submerged and intertidal land owned by the state.

According to the legislation, the definition of "submerged land" includes:

- "All land from the mean low-water mark or a maximum of 1,650 feet seaward of the mean high-water mark, whichever is closer to the mean high-water mark, out to the seaward boundary of coastal waters as defined in section 6001;

- All land below the mean low-water mark of tidal rivers upstream to the farthest natural reaches of the tides;"

An administrative fee of $100 is charged for each lease. In addition, a rental fee (minimum charge, $75), based on the fair market rental value of the land, is charged. The fair market rental value is considered to be the municipally assessed value per square foot for the adjacent upland multiplied by a reduction factor based on the use of the leased submerged land. The following reduction factors are applied:

- 0%, or no rental fee, for nonprofit organizations or publicly owned facilities that offer free public use or public use with nominal user fees (includes public access facilities and utilities, town wharves, walkways, fishing piers, boat launches, parks, nature reserves, swimming or skating areas);

- 1% for commercial fishing uses of renewable aquatic resources (includes fish piers, lobster impoundments, fish processing facilities, berthing for fishing boats, and floats or piers for the storage of gear);

- 2% for water dependent commerce, industry, and private uses; and

- 10% for upland uses and fill.

In those cases where it is determined that the municipally assessed value of the adjacent upland is not an accurate indicator of the value of submerged land, an appraisal may be required.

Rationale for Leasing Fees

According to Maine's *Submerged Lands Program Rules and Policies Manual* (Effective Date: March 15, 1986), coordinated management of Maine's submerged

lands is necessary to resolve the increasing number of conflicts that may arise between development and preservation of environmental quality, resource conservation and public rights to use these resources. Thus, the apparent rationale for Maine's Submerged Lands program is to address these issues rather than produce revenues or provide services.

The fee structure for leased lands was one of the key public policy issues considered in Maine's *Submerged Lands Study*. According to the study, lease fees should return fair market value to the state and be adequate to cover program costs.

As already indicated, Maine charges an administrative fee of $100 for each lease and a rental fee (minimum charge, $75) based on the fair market value of the land. Fair market value is calculated based on the municipally assessed value per square foot for the adjacent upland multiplied by a reduction factor based on the use of the leased submerged land.

According to Maine's *Submerged Lands Study*, rental fees for submerged lands in Maine should be administratively and economically efficient and provide compensation to the public for private use of submerged lands; and lease fees must provide, at a minimum, adequate revenue to cover the cost of administering the submerged lands program.

Leasing of Submerged Lands in Other States

Leasing Fee Systems

According to a study prepared for the Oregon Division of State Lands by Pacifica Economica, Inc., pricing the use of submerged and submersible lands is one of the more controversial topics in the debate of the broader issue. A variety of fee systems are used in other states for leasing submerged lands, including flat rates per square yard and lump sum or annual rates. For example, in Texas, the submerged land rate schedule, revised in 1987, bases commercial lease fees on both the value of the proposed use and the appraised value of adjacent upland property. New Jersey uses the appraisal method. In Louisiana, rates for most uses are determined by competitive bid.

In addition to variations in fee systems from state to state, fee structures often vary within states based upon type of use. For example, Oregon uses four types of waterland leases to distinguish lessees:

- Upland related commercial and industrial (includes workboats, barge moorages, drydocks, fish canneries, and receiving stations); rates are equal to 6% of the appraised value of the adjoining upland.

- Public and private moorages and marinas; the rate for the first acre is $400 and $240 for each additional acre.

- Log rates; annual rates per acre average $125.

- Other; $200 for the first acre and $120 for each additional acre.

In California:

- Public uses pay a $25 filing fee and a $450 processing fee.
- A permit for residential, recreational pier permits cost $70 and is good for ten years.
- Leases for commercial uses are based either on an appraisal value or a percent of gross revenue. Marinas are the most common commercial use, followed by restaurants.
- Industrial lease rates are based on appraised value.

A survey of state submerged land policies was conducted as part of the 5th Annual Submerged Lands Conference (1986). While the results of this survey are somewhat out-of-date, they are included for reference in Appendix A.

States also employ a wide variety of land valuation methods. Appendix B provides brief descriptions of a number of these methods.

Lease Fee Revenues

Assessing the issues of equity and efficiency are key to developing and implementing a lease fee system. For example, the adequacy of lease fee schedules to yield a fair rate of return was one issue the Maine legislature directed its Bureau of Public Lands to assess. Likewise, the State of Oregon recently conducted a study to determine if its leases were equitable to the lessees and economically and administratively efficient. In its study, Oregon defined equity as meaning that users of like waterlands pay like rents (horizontal equity) and users of unlike waterlands pay unlike rents (vertical equity). Economic efficiency meant that rents charged should equal what a competitive private market would charge. Administrative efficiency meant that the costs of determining lease rates and collecting the rents should be minimized.

At present, Maine's Submerged Lands Program has not yet generated any surplus revenues; revenues from fees are used for administrative costs only. However, as already indicated, future surplus revenue may be used to provide public benefits that are in keeping with public trust doctrine such as access acquisition, fish piers, and public boat launching facilities.

In some states, revenue from submerged land leases is used for public education, boating facilities, public walkways, and access trails as well as for submerged lands program management. For example, in Oregon submerged and submersible lands under navigable waterways and shorelands are managed as assets of the Common School Fund. The revenues from leasing these waterlands go into the Common School Fund which is used to fund public education. Louisiana, with 4.3 million acres of navigable water bottoms, depends on leases of state owned lands and mineral rights to fund most of its government services.

An exhaustive survey of state submerged land leasing systems was beyond the scope of this study. However, according to Stephen Oliveri, a Resource Administrator in Maine's Submerged Lands Program, Texas and California generate the most revenue of all states from the leasing of submerged lands.** In Texas, holdings include approximately 4 million acres of submerged land in bays, tidally influenced rivers, and the Gulf of Mexico. State ownership in the coastal area extends seaward from the line of mean high tide to 10.3 miles in the Gulf of Mexico. Leases, easements, and permits are issued for noncommercial piers and docks, pipelines and utility lines, offshore platforms, shoreline stabilization projects, channel dredging, the use of state-owned fishing cabins, and management of natural areas for recreation, education, research, and preserves. According to an informal, unpublished survey conducted by Connecticut's Coastal Program, New Jersey is also one of the few states which generates surplus revenues from submerged land leases.

** While Maine's publicly-owned submerged lands begin at the low water mark, most other coastal states define their publicly-owned submerged land by the high water mark. States which utilize the high water mark definition have jurisdiction over a significantly greater portion of their coastal lands. While these states may have less coastline than Maine, they tend to have larger submerged land programs and broader authority than Maine.

Rationale for Leasing Fees

The key to a successful leasing program is a clear expression of legislative intent, according to John DeMeyer of Washington's Department of Natural Resources, Marine Land Management Division. In Washington, the state constitution, legislative direction, and numerous Supreme Court decisions, made it clear that the management objective was to generate income. However, in the early 1980s, the legislature, prompted by an outcry from lessees and interest groups, imposed a moratorium on lease fee increases. Legislation was ultimately enacted which deemphasized income generation as the primary management objective. The legislation articulated a management philosophy, prioritized uses of aquatic land, prescribed how rents were to be determined, and directed that lease revenues be used for aquatic enhancement projects. The state deducts administrative costs from lease revenues; the remainder of the revenue goes into programs that are used to purchase or enhance wetlands or to improve access to aquatic lands. Upland lease revenues go into the state's school and transportation funds.

Two goals guide the management of public land and resources in Texas: the production of maximum revenues for the Permanent School Fund, and the preservation of environmental quality and renewable resource productivity. Texas uses its public lands to finance a system of free public education – revenues are primarily deposited in the Permanent School Fund. The School Land Board, the executive agency authorized to manage public lands with the assistance of the General Land Office, is authorized by statute to "prescribe reasonable filing fees and fees for granting leases, easements, and permits."

In Virginia, funds generated from leasing of submerged tidal lands are, by law, paid into the state treasury to the credit of the Special Oyster Rock Replenishment Fund and are used in the annual placement of shell and seed on Public Oyster Grounds. The obvious intent of this provision is to partially compensate the public for use of a "common" resource.

Potential Impacts of a Submerged Lands Leasing Policy on New Hampshire's Commercial Fishing Industry

The impacts of a state submerged lands leasing policy on New Hampshire's commercial fishing industry will depend upon the legislative intent underlying the policy, the methodology used to determine lease fees, and the administrative and/or rental fees charged to various uses and categories of lessees. In the absence of an existing state submerged lands leasing policy which specifies these parameters, it is not possible to quantitatively analyze the potential impacts of such a policy on New Hampshire's commercial fishing industry. In fact, the explicit purpose of submerged lands leasing policies in some states is to minimize negative impacts on the commercial fishing industry from competing uses. Thus, the discussion below highlights policy options initiated in other states to accomplish this goal. In addition, it briefly addresses the response of New Hampshire's commercial fishing industry to the *concept* of a state submerged lands leasing policy, based on interviews with a number of commercial fishermen.

Conversations with several local fishermen indicate that while the economic costs to New Hampshire's commercial fishing industry of a leased lands policy might be minimal, there would be negative psychological impacts. Specifically, they indicated that the industry is already impacted by such forces as soaring waterfront property taxes and land prices fueled by coastal development pressures. In addition, they felt lease fees for submerged lands would be likely to generate substantial controversy and unanimous opposition from commercial fishermen. Another representative of the commercial fishing industry indicated that fishermen would view lease fees as a "new tax." Further, he thought that while the impact on New Hampshire's commercial fishing industry as a whole might be minimal, the impact on individual fishermen would likely be more substantial. One local commercial fishermen estimates there are approximately twenty piers along New Hampshire's coastline and tidal waters which are used for commercial fishing purposes and thus would be affected by a state submerged lands leasing policy.

However, a leased lands program can incorporate policies and planning measures which minimize adverse impacts as well as provide future protection to the commercial fishing industry. Policies and planning initiatives cited in Maine's *Submerged Lands Study* which are designed to achieve these goals include:

- denying permits or requiring mitigation measures for projects with potentially adverse impacts on commercial fishing;
- favorable leasing fees for commercial fishing;
- maintaining water-dependent uses that provide services to commercial fishermen such as boat yards, fueling stations, and marine supply stores; and
- establishing "bluebelts" where activities that would interfere with fishing are prohibited.

In addition, the proposed lease must satisfy the following conditions:

- will not unreasonably interfere with navigation;
- will not unreasonably interfere with fishing or other existing marine uses of the area;
- will not unreasonably diminish the availability of services and facilities necessary for commercial marine activities; and
- will not unreasonably interfere with ingress and egress of riparian owners.

Finally, as already indicated, commercial fishing as well as water dependent and public uses are favored in Maine through its leasing fee structure – for commercial fishing and water dependent uses, reduction factors of 1 percent and 2 percent respectively are applied.

According to Stephen Oliveri, a Resource Administrator in Maine's Submerged Lands Program, Maine's submerged lands lease rates are so minimal they have no negative impact on the commercial fishing industry. In fact, the state's primary concern is to minimize negative impacts on the commercial fishing industry. In Maine, as elsewhere on the east coast, marketplace forces favor the development of coastline for condominiums and marinas over commercial fishing support services and facilities. As indicated above, the state's *Submerged Lands Study* identified the need for new policies and statutory authority to deny leases for certain activities in order to ensure continued protection for the fishing industry and its supporting infrastructure. Currently, the state is conducting a study to assess impacts on fishing industry infrastructure such as boatyards offering repairs and supplies, fuel and ice stations, areas for gear storage, and unloading stations.

Like Maine, some other states have submerged lands leasing policies which require a proposed activity's impacts on commercial fishing be considered when issuing a lease for submerged lands. Through this approach, particular activities which would negatively impact the commercial fishing industry are discouraged through the denial of leases rather than through financial disincentives such as higher lease rates.

Other states also have policies and fee structures which favor public recreation, environmental impacts, and docks for private use as well as commercial fishing interests. For example, Pennsylvania's legislation specifies that no charges shall be imposed for the following categories of activities and structures:

- Any facility to provide access to the general public to water for recreational boating, fishing, hunting, swimming, or other recreation where such access is provided without charge or on a nonprofit basis.

- Any private recreational dock constructed pursuant to a general permit.

Similarly, in Hawaii:

- The board shall not lease state marine waters or submerged lands unless the board finds that a lease for the proposed activity is clearly in the public interest upon consideration of the overall economic, social, and environmental impacts and consistent with other state policy goals and objectives.

Further, Hawaii's legislation directs the board to evaluate each application based on:

- The extent to which the proposed activity may have a significant adverse impact upon any existing private industry or public activity, including the use of state marine waters for the purposes of navigation, fishing, and public recreation.

Texas favors public uses by requiring them to pay only a nominal fee. In addition, the state's public policy is that every land owner adjoining the water should be able to put up a minimal dock (less than 300') for private use.

Conclusion

Many states currently have submerged land leasing systems. These systems are based on a wide variety of fee structures and are based on a number of different underlying principles. Based on the experience of other states, a clear expression of the rationale underlying a leasing program is essential to a successful leasing program. The rationales underlying most systems generally fall into three categories – compensation for the use of a public trust resource; preservation of environmental quality and resource conservation; and revenue generation, usually to benefit the public through the general fund, school fund, or other programs of public benefit.

Using revenue generation as the rationale for a leased lands policy is problematic. For example, in at least one state where this rationale was used, an outcry from lessees and interest groups resulted in new legislation which deemphasized this objective and stressed a legislative intent to protect public trust interests. Furthermore, it appears that few states are generating surplus revenues from their submerged lands leasing programs. For example, in the neighboring state of Maine, revenues are used for administrative costs only; no surplus revenues have been generated. In those states that do appear to generate substantial revenues – for example, New Jersey, Texas, and California – the type and quantity of lessees as well as the area of land within the jurisdiction of their submerged lands programs, are not equalled in New Hampshire. For example, Texas' submerged lands program encompasses 4 million acres of submerged lands and substantial ports and offshore drilling.

Pricing the use of submerged lands is perhaps the most controversial issue. With regard to pricing, it is clear that lease fees must be equitable as well as efficient. In New Hampshire, more detailed study is required to determine the details of an equitable and efficient fee structure.

Based on informal discussions with several local fishermen, it seems likely that a leasing fee system, at any level, would generate substantial opposition. On the other hand, a leasing program presents an opportunity to implement policies which would protect commercial fishing interests by denying leases for those uses which would negatively impact the industry. Maine is particularly interested in pursuing this type of policy initiative and is currently conducting further research in this area. An exact determination of the impacts of a submerged lands leasing policy on commercial fishermen will require the clear definition of a number of policy issues.

Clearly, if the state is to implement a successful submerged lands leasing system, significant effort will be required to ensure that an equitable and efficient system, based on clear legislative intent, is developed. An important step in this process will be further study, consideration, and policy determinations regarding the following issues:

- Definition of submerged lands
- Rationale for leasing of submerged lands
- Leasing fee system methodology
  - equity
  - economic and administrative efficiency
- Clear and detailed understanding of affected parties
- Use of surplus revenues

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Appendix A

Appendix A
5th Annual Submerged Lands Conference
1986

Submerged Lands Tenure Policy Data

1. California

   State Lands Commission

2. Idaho

   Department of Lands

3. North Carolina

   Department of Administration, State Property Office

4. Oregon

   Division of State Lands

5. Texas

   General Land Office

6. Washington

   Department of Natural Resources

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
GENERAL LEASE Commercial: Income producing uses such as marinas, restaurants, clubhouses, recreation piers or facilities, docks, moorings, buoys, helicopter pads, decks or gas facilities.	Negotiated - Lease term shall be limited according to standard commercial practices.	Average 20 years Maximum 49 years	Commercial Use: An annual rental based on any one or combination of the following rental methods, with a minimum rental of $250: (A) A percentage of annual gross income (the percentage being based on an analysis of the market for like uses and other relevant factors); (B) 9% of the appraised value of the leased land;	Authorization of all leasing procedures is by Public Resource Code. The following factors shall be considered by the Commission in determining which rental method should apply: (1) The amount of rental the State would receive under various rental methods; (2) Whether relevant, reliable and comparable data is available concerning the value of the land proposed to be leased (3) Whether a particular method or amount of rental would effectively cause an applicant to use more competitive substitute land or to abandon its project altogether; (4) Whether the land proposed to be leased has been classified as environmentally significant pursuant to Public Resources Code Section 6371. (5) The monetary value of actual or potential environmental damage anticipated from an applicant's proposed use to the extent such damage is quantifiable; (6) Other factors relating to the appropriateness of the proposed rental method.
MINERAL LEASE Industrial: Uses such as oil terminals, piers, wharves, warehouses, stowage sites, moorings, dolphins and islands; together with necessary appurtenances.	Negotiated - Lease term shall be limited according to standard industrial practices.	Average 25 years Maximum 49 years	Industrial Use: An annual rental based on any one or combination of the following rental methods with a minimum rental of $250: (A) 9% of the appraised value of the leased land together with 2¢ per diameter inch per lineal foot of pipelines and conduits on the leased premises;	

GENERAL LEASING PRACTICES

(a) This article applies to the leasing of all lands under the Commission's jurisdiction for all surface uses except the exploration for or extraction of natural resources including minerals, oil, gas or other hydrocarbons, or geothermal resources or any other natural resources, excluding timber.

(b) Leases or permits may be issued to qualified applicants and the Commission shall have broad discretion in all aspects of leasing including category of lease or permit and which use, method or amount of rental is most appropriate, whether competitive bidding should be used in awarding a lease, what term should apply, how rental should be adjusted during the term, whether bonding and insurance

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9-1-86

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
GENERAL LEASE Right of Way: Uses such as roadways, power lines, pipelines or outfall lines; except when used only as necessary appurtenances.	Negotiated - Lease	Average 30 years Maximum 49 years	Right of Way Use: An annual rental based on any one or combination of the following rental methods with a minimum rental of $100: (A) 9% of the appraised value of the leased lands, together with compensation for any damage caused to such lands; (B) 2¢ per diameter inch per lineal foot.	
GENERAL PERMIT Public agency uses such as public roads, bridges, recreation areas or wildlife refuges having a statewide public benefit.	Permit	Average 15 years Maximum 49 years	General Permits: Annual rental shall be based on 9% of the appraised value of the leased lands with a minimum rental of $50: (A) No rental shall be charged for public agency use of tide and submerged lands if the Commission at its sole discretion, determines that a statewide public benefit accrues from such use; (B) Monetary rental for Public Resources Code Section 6321 protective structures may be waived if the Commission determines that a public benefit accrues from the installation of such structures.	

GENERAL LEASING PRACTICES (cont.)

(c) Leases or permits for tide or submerged lands shall generally only be issued to riparian or littoral upland owners or use right holders, provided however that such leases or permits may be granted to the best qualified applicants irrespective of riparian or littoral status.

(d) Leases or permits for school, lieu or indemnity lands shall be for value or value enhancement purposes.

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
PROTECTIVE STRUCTURES: Public Resources Code Section 6321 protective structures such as jetties; sea walls, breakwaters and bulkheads.	General Permit	Average 30 years Maximum 49 years	General Permits: Annual rental shall be based on 9% of the appraised value of the leased lands with a minimum rental of $50: (A) No rental shall be charged for public agency use of tide and submerged lands if the Commission at its sole discretion, determines that a statewide public benefit accrues from such use; (B) Monetary rental for Public Resources Code Section 6321 protective structures may be waived if the Commission determines that a public benefit accrues from the installation of such structures.	
NON INCOME: Non income producing uses such as piers, buoys, floats, boathouses, docks, waterski facilities, and campsites not qualifying for a private recreational pier permit under 2002(f). Other uses may include campsites, cabins, dwellings, arks, houseboats, or boathouses provided that when such uses are located on sovereign lands that such uses are not found to be inconsistent with public trust needs.	General Permit	Average 25 years Maximum 49 years	General Permits: Annual rental shall be based on 9% of the appraised value of the leased lands: with a minimum rental of $50: (A) No rental shall be charged for public agency use of tide and submerged lands if the Commission at its sole discretion, determines that a statewide public benefit accrues from such use; (B) Monetary rental for Public Resources Code Section 6321 protective structures may be waived if the Commission determines that a public benefit accrues from the installation of such structures.	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9-1-86

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
GRAZING LEASE Grazing Lease: Use includes the feeding of livestock on forage.	Lease - Negotiated	Average 10 years Maximum 10 years	Grazing: An annual rental based on appraised value for the intended use.	
AGRICULTURAL LEASE Agricultural Lease: Uses may include farming, silviculture and horticulture.	Lease - Negotiated	Average Maximum 25 years	Agricultural: An annual rental based on any one or combination of the following rental methods with a minimum rental of $250: (A) A percentage of annual gross income (the percentage being based on analysis of the market for like uses and other relevant factors); (B) 9% of appraised value of the leased lands.	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9-1-86

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
FOREST MANAGEMENT AGREEMENT Forest Management Agreement: Uses may include reforestation, improvement of timber growth and soil productivity, vegetation control, reduction of fire and erosion hazards, insect or disease control or any other use that enhances the value of lands subject to the agreement.		Average 30 years Maximum 49 years	Forest Management Agreements: Rental shall constitute enhancement of the land's value resulting from the use.	
SALVAGE Salvage Permit: Use includes the salvage of all abandoned property over and upon ungranted tide and submerged lands of the State which property belongs to the State and is under the Commission's jurisdiction pursuant to Public Resources Code Section 6309. The Commission may retain or sell any or all salvaged property or may allow the Permit applicant to retain it.	Negotiated Permit	Maximum 1 year Will review at end of period for extension	Salvage Permit: Rent[illegible] will be as follows: (A) A rental of $25.00 per annum per acre, computed on a whole or fractional basis, for the total acreage of the permit area; and (B) 25% of the net salvage value up to $25,000 and 50% of all such value over that amount for all salvaged property the salvor is permitted to retain; or (C) The net salvage value of any property the State retains less any rental to which it is entitled; and (D) Such other consideration as may be deemed by the Commission to be in the best interest of the State.	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9-1-86

California
(STATE/PROVINCE)

State Lands Commission
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
PIER PERMIT Private Recreational Pier Permit: Use is limited to any fixed facility for the docking or mooring of boats constructed for the use of the litoral landowner, as specified in Public Resources Code Section 6501.5, and does not include swimming floats or platforms, sun decks, swim areas, fishing platforms, residential, recreational dressing, storage or eating facilities or areas attached or adjacent to recreational piers, or any other facilities not constructed for the docking or mooring of boats.	Form Permit	Maximum 10 years Review at end of period for new permit	Rent Free	Standard one page form used as official document. Rent free permits are issued for control and study purposes.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/24/86

Idaho
(STATE/PROVINCE)

Department of Lands
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
Commercial Marinas	Encroachment permit provides for review of environmental & navigational impacts of proposed moorage. Leases will only be issued after the encroachment permit is approved.	Indefinite term but cancelled if the marina isn't built within three years.	$50 application/publication fee	Only facilities built or enlarged since 1974 pay rent to occupy sovereign lands. Only 5-10% of existing facilities are under lease.
	Lease: only required on commercial ventures	10 years	$100/acre or 3.75% of gross moorage receipts, whichever is greater, per year	
Condominium style docks, (dockominiums).	Encroachment permit - provides for review of environmental impact of proposed moorage. Leases will only be issued after the encroachment permit is approved.	Indefinite term, but cancelled if the marina isn't built within three years.	$50 application fee	Only facilities built or enlarged since 1974 pay rent to occupy sovereign lands. Only 5-10% of existing facilities are under lease.
	Lease: only required on commercial ventures.	10 years	$100/acre or 5% of typical gross moorage for similar first-come, first-served marinas, whichever is greater.	

Idaho is presently reviewing its sovereign land leasing policy. It appears that non-water dependent uses will be discouraged or prohibited, but individual uses in practice since 1974 will maintain their "grandfathered" status.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/24/86

Idaho
(STATE/PROVINCE)

Department of Lands
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
Log handling and booming	Encroachment permit	Indefinite term	$50 application fee	Only facilities built or enlarged since 1974 pay rent. No log booming or handling areas are under lease at this time. No enlarged booming areas have been approved since 1974.
	Lease	10 years	$100/acre annually	
Single family docks	Encroachment permit	Indefinite term	Free	Limited to 700 square feet of decked area.
Floathome	Encroachment permit	Indefinite term	Free	No permits have been issued for floathomes since 1974.
Restaurants	Encroachment permit	Indefinite term	Free	No permits have been issued for floathomes since 1974
	Lease	10 years	3.75% of gross receipts annually.	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/10/86

North Carolina
(STATE/~~PROVINCE~~)

Department of Administration/
State Property Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
SIMPLE RIPARIAN ACCESS - applies to all uses except commercial, aquaculture and mineral rights	NONE	NONE	$100 administration fee	Includes marinas, etc.
COMMERCIAL WHARFAGE - on a case-by-case basis exceptions to the general exclusion is made	LEASE	Normally 25 years	No fixed rate	Limited to large commercial facilities for use in shipping

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/10/86

North Carolina
(STATE/[redacted])

Department of Administration/
State Property Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
AQUACULTURE - limited to mollusks and does not allow water column occupation in dedication	LEASE	10 years	$5.00 per acre per year	
MINEARL RIGHTS	LEASE	25 years	Return contingent on recovery	Two leases are presently held by one company for mining phospates from the bed of a major coastal river. Subject to environmental permits

SUBMERGED LAND TENURE POLICY DATA SHEET

Date_____

OREGON
(STATE/PROVINCE)

DIVISION OF STATE LANDS
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
COMMERCIAL MARINAS AND MOORAGES applies to small harbors, boat basins or moorage facilities providing dockage for small craft	LEASE - issued for publicly or privately owned facilities with floats or docks having a surface area of 2,250 square feet or more that offer boat moorage, boat rentals, boat storage, marine service and supplies of any combination thereof	Normal term is 20 years for initial and renewal leases	$400 for the first acre or any portion thereof, and $240 for each additional acre within the leasehold area per annum; rent adjusted annually based on change in local Consumer Price Index	-Adjacent upland owner has "preference right to lease -When preference right is waived, area is advertised and competitively bid -No lease required for facilities with less than 2,250 square feet surface area -Annual rental redeterminations subject to Leasing Rules in effect at time of redetermination
PRIVATE DOCKS, FLOATS AND BOATHOUSES applies to structure constructed for the personal, exclusive use of the owner, built over or floating upon the water and used as a landing or storage place for small craft.	LEASE - issued for facilities having a float, dock or boathouse surface area greater than 1,000 square feet	Normal term is 20 years for initial and renewal leases	$400 for the first acre or any portion thereof, and $240 for each additional acre within the leasehold area per annum; rent adjusted annually based on change in local Consumer Price Index	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competitively bid -No lease required for facilities with less than 1,000 square feet surface area -Annual rental redeterminations subject to Leasing Rules in effect at time of redetermination

SUBMERGED LAND TENURE POLICY DATA SHEET

Date_____

OREGON
(STATE/PROVINCE)

DIVISION OF STATE LANDS
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
HOUSEBOATS AND HOUSEBOAT MOORAGES applies to floating structures capable of being used as residences	LEASE	Normal term is 20 years for initial and renewal leases	$400 for the first acre or any portion thereof, and $240 for each additional acre within the leasehold area per annum; Rent adjusted annually based on change in local Consumer Price Index	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competively bid -Annual rental redetermin-ations subject to Leasing Rules in effect at time of redetermination
EXTENSION OF UPLAND USE applies to uses that are not water-related or water-dependent. Example: apartments and private residences, restaurants and bars, office bldgs. and retail sales outlets; private, commercial, or industrial	LEASE	Normal term is 20 years for initial and renewal leases	6% of the per acre appraised value of the adjacent upland; Rental is subject to redeter-mination at five-year intervals Rental is subject to appeal	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competively bid -Annual rental redetermin-ations subject to Leasing Rules in effect at time of redetermination

SUBMERGED LAND TENURE POLICY DATA SHEET

Date_____

OREGON
(STATE/PROVINCE)

DIVISION OF STATE LANDS
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
LOG STORAGE applies to unbounded water surface area used for mooring and storing rafts	LEASE	Normal term is 10 years for initial and renewal leases	$200 for the first acre or any portion thereof, and $20 for each additional acre within the leasehold area per annum; Rent adjusted annually based on change in local Consumer Price Index	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competitively bid -Annual rental redetermin-ations are subject to leasing rules in effect at time of redetermination
LOG BOOM AREA applies to a water surface area bounded by floating, con-necting logs and used for confining, grading, and sorting logs, and assembling log rafts	LEASE	Normal term is 10 years for initial and renewal leases	$200 for the first acre or any portion thereof, and $20 for each additional acre within the leasehold area per annum; Rent adjusted annually based on change in local Consumer Price Index	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competitively bid -Annual rental redetermin-ations are subject to leasing rules in effect at time of redetermination

SUBMERGED LAND TENURE POLICY DATA SHEET

Date_____

OREGON
(STATE/PROVINCE)

DIVISION OF STATE LANDS
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
AQUACULTURE applies to the culture and/or farming of food, fish, shellfish and other aquatic plants and animals in fresh or salt water areas.	LEASE	Any period up to 20 years if the proposed use may be reasonably expected to exist for the period of time requested	Rent to be set by Division staff appraisal. Rent is typically expressed as a percent of gross income.	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertised and competitively bid
CONDOMINIUMS AND DOCKOMINIUMS applies to facilities subject to unit ownership	LEASE	A period which allows the owner to amortize the investment under generally accepted accounting procedures	Rent to be set by Division staff appraisal	-Adjacent upland owner has "preference right" to lease -When preference right is waived, area is advertise and competitively bid

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
PUBLIC USES Recreation, estuarine preserves, wildlife preserves, scientific research	COASTAL LEASE	Negotiable	Private Activity Filing fee - $5.00 Annual fee - $5.00 minimum, negotiated rate Commercial Activity Filing fee - $50.00 Annual fee - $100 minimum, negotiated rate Public Activity Filing fee only - $5.00	Commercial activity—Activity which is designed to enhance or accommodate a profit-making venture or is associated with a revenue generating activity. Private activity—Activity which is not performed by a public entity, is not designed to enhance or accommodate a profit making venture, and is not associated with a revenue generating activity. Public activity—Activity which is performed by a public entity and is not designed to enhance or accommodate a profit making venture, and is not associated with a revenue generating activity. Public entity—City, county, state agency, board, or commission, or any other political subdivision of the state except a navigation district
PRIVATE PIERS OR DOCKS 100 feet long or less and 25 feet wide or less that require no dredging or filling	STRUCTURE REGISTRATION	Perpetual	Filing fee only - $5.00	School Land Board approval is not required for construction, but structure location must be registered.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
OTHER PIERS AND DOCKS	COASTAL EASEMENT	Negotiable	Private Activity, structure 300 feet long or less and 2,500 feet square or less: Filing fee only - $5.00 Private Activity, structure more than 300 feet long or 2,500 feet square: Filing fee - $50.00 Annual fee charged for area in excess of above dimensions - $.10 per square foot, $100 minimum Commercial Activity Filing fee - $50.00 Annual fee - $.20 per square foot or negotiated rate, $100 minimum Public Activity Filing fee only - $5.00	School Land Board approval is required prior to construction. Issued to owners of littora property adjacent to state-owned submerged land.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
MARINAS	COASTAL EASEMENT	Negotiable	Boat Slips in Clear Lake Filing fee - $50.00 Annual fee - $3.60 per linear foot or negotiated rate Boat Slips in Other Areas Filing fee - $50.00 Annual fee - $2.88 per linear foot or negotiated rate	
WHARVES	COASTAL EASEMENT	Negotiable	Filing fee - $50.00 Annual fee - $.30 per square foot or negotiated rate, $100 minimum	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
BREAKWATERS, JETTIES, GROINS	COASTAL EASEMENT	Negotiable	Private Activity, structure 300 feet long or less: Filing fee only - $5.00 Private Activity, structure longer than 300 feet: Filing fee - $50.00 Annual fee - $.10 per square foot, $25 minimum Commercial Activity Filing fee - $50.00 Annual fee - $.20 per square foot, $100 minimum Public Activity Filing fee only - $5.00	
DREDGING	COASTAL EASEMENT	Negotiable	Mineral Interest Holder Filing fee - $50.00 First-year fee for new dredging - $.02 per square foot, $100 minimum Annual fee for maintenance dredging - $.005 per square foot, $100 minimum (continued)	Mineral Interest Holder - Holder of a lease for oil or gas extraction who plans to dredge on state-owned land outside the leasehold tract to obtain access to the leasehold tract.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
DREDGING (cont'd.)	COASTAL EASEMENT	Negotiable	Private Activity, area encumbered 2,000 square feet or less and channel width 20 feet or less: Filing fee - $50.00 First-year fee for new dredging - $.03 per square foot, $100 minimum Annual fee for maintenance dredging - $.005 per square foot, $100 minimum Private Activity, area encumbered more than 2,000 square feet or channel width more than 20 feet: Filing fee - $50.00 First-year fee for new dredging - $.03 per square foot or negotiated rate, $100 minimum Annual fee for maintenance dredging - $.005 or negotiated rate (continued)	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
DREDGING (cont'd.)	COASTAL EASEMENT	Negotiable	Commercial Activity Filing fee - $50.00 First-year fee for new dredging - $.04 per square foot or negotiated rate, $100 minimum Annual fee for maintenance dredging - $.005 per square foot or negotiated rate, $100 minimum Public Activity Filing fee only - $5.00	
CABINS State-owned structures on coastal public lands	CABIN PERMIT	Not to exceed 5 years	Filing fee - $50.00 Annual fee - $.70 per square foot of attached roofed area, $175 minimum Exception: If the permit was issued prior to the July 18, 1983 rate increase, and if the annual fee will impose an undue financial hardship, the permit holder may apply for a continuation of the previous fee.	

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/25/86

Texas
(STATE/PROVINCE)

General Land Office
(AGENCY NAME)

Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
POWER LINES AND TELEPHONE LINES	RIGHT-OF-WAY EASEMENT	10 years	Filing fee - $50.00 Contract fee - Per-rod charge for 10-year term based on right-of-way width: 0-50 feet - $10 per rod 51-100 ft. - $15 per rod 101-200 ft. - $25 per rod over 200 ft. - $35 per rod Minimum fee - $500/10 years	
ELECTRIC SUBSTATIONS, PUMPING STATIONS, LOADING RACKS, TANK FARMS	SURFACE LEASE	Negotiable, 10-year maximum	Filing fee - $50.00 Contract fee - annual payment, based on percentage per year of appraised market value of area encumbered at time of contract execution	

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Policy Name/Description	Type of Tenure/Authorization	Term of Tenure	Pricing Rationale/Rental Rates	Comments/Special Considerations
DIRECTIONAL DRILLING LOCATIONS, PLATFORMS, ETC. in the Gulf of Mexico, bays, and tidally influenced areas	SURFACE LEASE	Negotiable, 50-year maximum	Filing fee - $50.00 Contract fee: Nonstate oil and gas - negotiable, $1,000 per year minimum State oil and gas - negotiable, $100 per acre per year minimum	
LEASES OF GULF LAND AND OTHER STATE-OWNED LAND IN THE COASTAL AREA FOR USES NOT ASSOCIATED WITH LITTORAL OWNERSHIP	SURFACE LEASE	Negotiable, 50-year maximum	Filing fee - $50.00 Contract fee - negotiable, $100 per year minimum	These activities may include piers in the Gulf of Mexico or uses of state-owned coastal upland.

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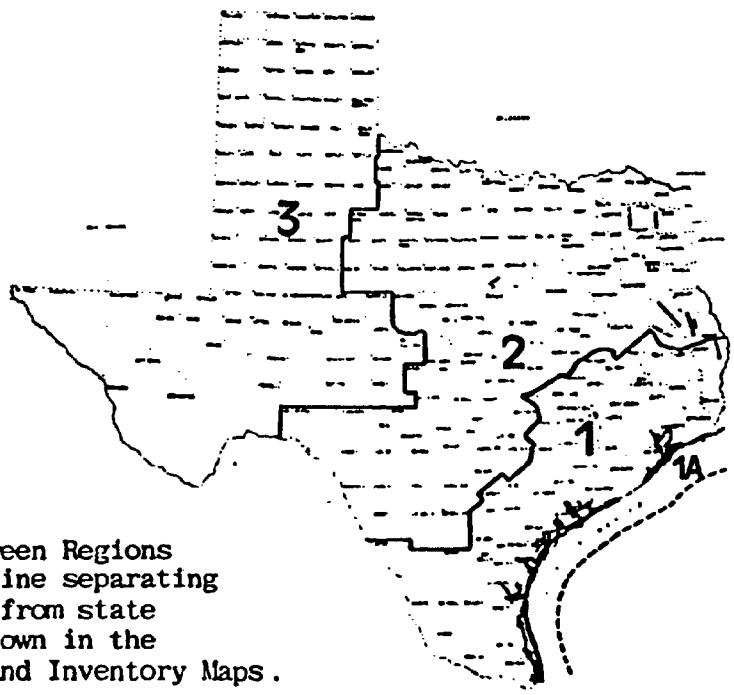
PIPELINES	RIGHT-OF-WAY EASEMENT	10 years	Filing fee - $50.00 Contract fee - per-rod, per-line charge based on outside diameter of pipeline, location, and point of origin. Pipelines origination within state boundaries - minimum fee of $500 for 10 years. See attached table and map. Pipelines originating in federal waters or others carrying nonstate oil and gas - $45 per rod to landfall or point of tie-in within state waters.	

RIGHT-OF-WAY EASEMENTS FOR PIPELINES

Outside Pipeline Diameter	Cost per Rod by Region*				Term
	Region 1**	Region 1A**	Region 2	Region 3	
0" - 13"	$9.00	$5.00	$7.00	$5.00	10 yrs.
Over 13"	$21.00	$13.00	$17.00	$13.00	10 yrs.

Filing Fee $50.00
Minimum Fee $500.00/10 yrs.

* Regions are shown on the map that follows
** Rates for Region 1 may be negotiated at the discretion of the commissioner if the easement application is for a pipeline carrying nonstate oil and gas. Rates for Region 1A may be negotiated at the discretion of the commissioner for any easement application.



The boundary between Regions 1 and 1A is the line separating state bay tracts from state gulf tracts as shown in the TGLO Submerged Land Inventory Maps.

SUBMERGED LAND TENURE POLICY DATA SHEET

Date 9/86

WASHINGTON
(State/Province)

DEPARTMENT OF NATURAL RESOURCES
(Agency Name)

Policy Name/Description	Type of Tenure/ Authorization	Term of Tenure	Pricing Rationale/ Rental Rates	Comments/Special Considerations
Commercial water dependent uses, i.e. marinas, shipyard marine terminal, etc.	Lease	Up to 55 years. Averages range between 15 & 30 depending on intensity of development	Rental caluclated by legislated formula. Assessed value of adjacent uplands x 30% x capitalization rate. Current rate is 5%.	Annual rent adjusted each year by change in Producer Price Index. Rent recalculated every 4 years.
Log storage	Lease	10 years maximum	Legislated rate of $170.00/acre/year	Per acre rate adjusted every four years by % change in other aquatic lease rates
Commercial nonwater-dependent rates; i.e. restaurants, shops, hotel, residential	Lease	Up to 55 years average is 30 years	Fair Market Rent based on highest and best use of the property	Existing residential uses "grandfathered". New residential allowed only in certain exceptional circumstances.
Aquaculture	Lease or harvest contracts	1 - 10 years Most are 10 years	Extractive types such as geoduck or shellfish which reproduce naturally and requires little, if any capital investment, pay full fair market value for the resource. Aquaculture activities requiring intensive investment such as salmon net pens pay an economic rent or formula rent whichever is less.	Site plans required. Geoducks 1985 price was .25 lb. Hardshell clams range from $1,200 - $3,000/acre. Mussel leases $50 first three years then up to formula rent.
	Right of Entry Permit	1 year	$50.00/acre	Limited to test purposes only
Sand/Gravel	Lease or Contract of Sale	1 - 5 years	Fair Market Value on per cubic yard basis. Usually negotiated, occasional public auction depending on access to sites. Prices range from $.05 to $.60/cu.yd. depending on proximity to market and quality of material.	

SUBMERGED LAND TENURE POLICY DATA SHEET

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WASHINGTON
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Oil & Gas	Lease	10 years	Fee set by statute. 1.25/ac/yr minimum plus 12 1/2% royalty when producing	
Minerals	Lease	2 - 20 years	.25-.50/acre, years 1-5 $5.00/acre plus % royalty thereafter. Royalty varies by type of mineral.	Under revision
Private Recreational Docks	Statutory Authorization	Perpetuity of conditions are met	Abutting residential upland owner authorized to construct and maintain dock for own non-commercial use	Limited to four unit multifamily per lot. Legality being challenged before State Supreme Court, January 1987.
Right of Way	Easement or Lease	Lease 30 years Easement in perpetuity	Public Utilities - no charge Other - underwater 0 to -50'= 1/2 upland value -50' to 100' 1/4 upland value -100' = 1/8 upland value Other - overwater Overhead lines = 1/3 above Bridges = 2/3 above	Lease used when use will have an ongoing impact to other biological resources in the vicinity i.e., sewer outfall resulting in automatic decertification of nearby shellfish beds. Term under review.

Appendix B

Appendix B
Land Valuation Methods

Market Approach. The most direct, logical and reliable method for estimating land values is to analyze actual transactions data for the sale or lease of comparable lands.

Income Approach. Value can be determined by estimating the present value of all future revenues deriving from the use of the land. This amount is adjusted by deducting the present value of all costs associated with improvements and other inputs into the economic activity located on the land in question. The balance is a net present value or "residual value." It is used to infer or impute the contribution and hence the worth or value of the land (itself) in connection with the associated economic activity.

Cost Approach. In some cases, the cost of creating usable land (e.g., through landfill operations) can be used as a measure of the land created.

Substitution Approach. A promising approach to the estimation of land values is to determine the cost of the next-best alternative or "substitute" for the leased submerged or submersible land. Generally, market transactions data can be used to estimate the value of such substitutes. This value is used, in turn, to estimate the value to the user of the submerged or submersible lands which are being leased. This method is not feasible for uses which are "water oriented" but not "water dependent" (presuming an absence of substitutes).

Extension Approach. In cases where the use of submerged or submersible lands is highly integrated with and economically inseparable from activities on adjacent uplands, the value of the adjacent uplands can be used to determine lease rates for the submerged or submersible lands. The presumption is that the use of these lands is an inseparable "extension" of the adjacent uplands use. The value of the adjacent uplands themselves would first be estimated using the market approach where appropriate market transactions data are available or the substitution approach if necessary.

Shore Contributions Approach. In cases where land and water uses are related to each other but essentially independent of each other, it may be most feasible to establish an indirect estimate of the value or worth of the leased or submerged or submersible lands. This is done by comparing waterfront properties with similarly used nonwaterfront properties and relying on the differences between the values of such properties as an indirect estimate of the "contributions" of the submerged or submersible lands associated with the waterfront properties. Market transactions data would be needed to generate such estimates.

Techniques for Determining Market Rates

Market Data Method

- sales or leases of comparable land in comparable uses (determine what rates the private sector charges for comparable land – can be accomplished informally through telephone survey or formally by professional appraiser).

- bid procedures (highest bidder determines the market value)

Appraisal

- A trained appraiser evaluates the land and its possible uses. Using one of two general techniques, the appraiser places a value on the land which approximates the price a willing buyer would pay for the land if it were offered in a competitive market.

    - indirect market approach (e.g., comparison of the subject property to properties of other related uses that are transacted in the market).

- the income approach (evaluates the completed financial information of a single firm or an average firm in an industry. Since land contributes to the production of the good or service produced on the land and the market prices all other inputs (labor and capital), the earnings after deducting all costs (including costs for management and for returns to capital) is the value of the land in any particular year.

Sources: *Economic Analysis of Lease Rates – Submerged and Submersible Lands,* Prepared for Oregon Division of State Lands by Pacifica Economica, Inc, May 1983.

Analysis of Lease Rates for Waterlands for the State of Oregon, Prepared for the State of Oregon, Division of State Lands by ECO Northwest, December 1987.

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