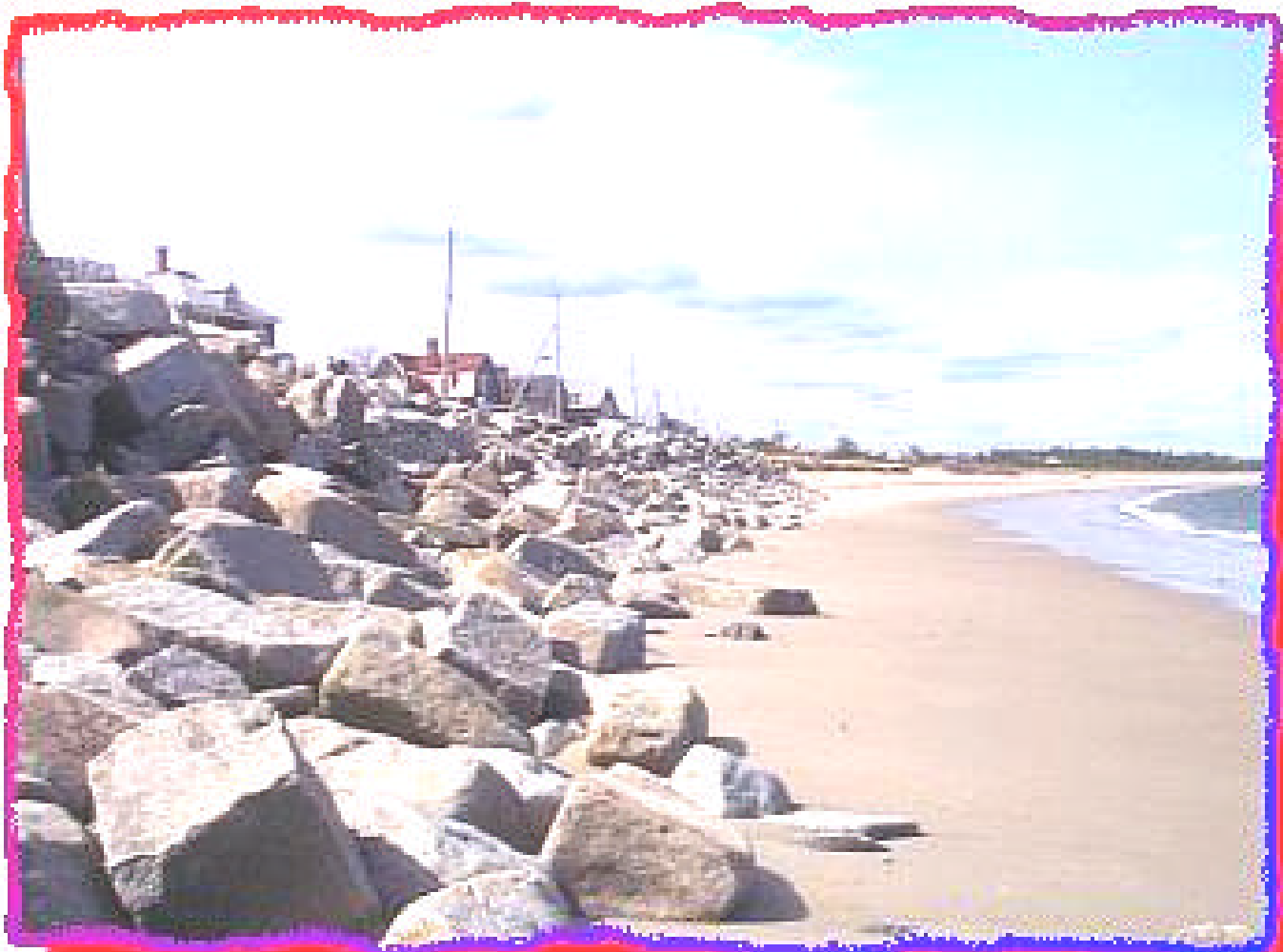


SACO BAY REGIONAL BEACH MANAGEMENT PLAN

EXECUTIVE SUMMARY



**Saco Bay Planning Committee
February 2000**

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{tc " A. Introduction "} A. Introduction

Residents and tourists use southern Maine's beach areas for recreation, tourism and housing needs. These same beaches also provide habitat for various birds, fishes, clams and other species, including some that are endangered or threatened. Erosion from storms and sea-level rise often threatens coastal areas, including loss of or damage to homes, businesses, beaches and dunes. In particular, the federal jetty located at Camp Ellis has had a profound effect on the sand flow for *all* of Saco Bay, depriving the southern end of the bay of sand and creating an abundance at the northern end. The complex array of variables involved in beach management requires local, regional, state and federal coordination.

Beaches and dunes are currently managed by state agency rules administered by the Maine Department of Environmental Protection (DEP) that regulate all coastal dune areas in order to minimize loss of life and property and at the same time maintain adequate protection of the natural resource base. Under the current regulatory structure, local and regional beach management interests are not involved in the day-to-day development and administration of coastal sand dune policies.

The focus of this plan is to identify beach management issues at the local and regional levels in order to provide solutions that alleviate inconsistencies or misunderstandings between local, state and federal policy makers. If local, state and federal interests are managing beach resources from a common understanding of the issues at hand, all parties will benefit from the results of a cohesive management plan for southern Maine's beaches. Improving the quality of the region's beaches will provide buffer protection against storms, recreational opportunities for locals and visitors, and habitat for wildlife.

{tc " B. Executive Summary "} B. Executive Summary

Findings:

Natural Resources

- The Saco Bay region represents **9** miles of the **23** miles (roughly 40%) of sand beaches located in southern Maine.
- Saco Bay is currently a productive and important feeding and nesting habitat for piping plovers. Although habitat for least terns is present in Saco Bay, they have not nested in Saco Bay for several years. Both of these species are classified as endangered under Maine's Endangered Species Act. In 1998, **12** plover pairs nested (representing 20% of Maine's total plover population) on Saco Bay beaches.
- Soft-shell clam landings in Saco Bay totaled **483,500 pounds** in **1997** and **399,000** pounds in 1998.

Geological Processes and Sand Management

- The Saco River is the main source of sediment for Saco Bay, providing between **8,000** and **12,000 cubic yards** of sand annually to the bay.
- The federal jetty located in Camp Ellis at the mouth of the Saco River has caused considerable accelerated erosion in the immediate area due to the structure's design. This area continues to experience an annual deficit of about **12,000 cubic yards** of sand, which is transported to the northern end of Saco Bay at Pine Point in Scarborough at an equivalent rate. The present jetty was raised and tightened over the last 100 years and resurfaced, raised and tightened in 1968-69, which has caused considerable erosion of roughly 2000 feet of beach immediately adjacent to the structure. The jetty's current configuration also has eliminated the natural flow of sand between the Saco River and *all* the beaches of Saco Bay.

Sand Dune Regulation

- Maine's sand dunes are regulated by rules promulgated in 1988 under the state's **Natural Resources Protection Act**. The rules, administered by DEP, discourage development of dune areas that are prone to coastal storm damage or that have important habitat value. The rules currently do not include the necessary provisions to recognize the local and/or regional circumstances unique to some of the state's beach areas.
- DEP received **361 standard application** permits for activities in sand dunes in the Saco Bay region between 1989 and March of 1999. The department also received **171 permit-by-rule applications** for sand dune activities in the region between 1994 and March of 1999.

Economic Impact and Tourism

- In 1997 U.S. overnight travelers took an estimated **3.5** million trips to southern Maine's coast, of these **2.1** million travelers stayed overnight in the region and **1.4** million passed through the area (Longwoods International, 1998)
- Marketable pleasure trips in southern Maine, excluding visits to friends and relatives, totaled **1.1** million in 1997, representing about **30%** of total pleasure trips in Maine. Of these trips, **45%** of visitors came to tour the region and **27%** came to enjoy area beaches (Longwoods International, 1998).
- The seasonal variation in **retail and services employment** indicates the economic importance of beaches in southern Maine. The median increase due to seasonal variation for the retail employment sector is roughly **29%** higher during August when compared to March. The median increase for the services employment sector is roughly **34%** higher during August when compared to March.
- The seasonal variation in the **Other Retail** (includes items not found in department stores such as jewelry/leather, sporting goods, bookstores, gift shops, toys, crafts, etc.) and **Restaurant/Lodging** categories shows the impact of beach communities. The average annual taxable sales for the Other Retail category in the Saco Bay region between 1993 and 1998 was **77%** higher during the third quarter (July-Sept) when compared to the first quarter (Jan-Mar), ranging from **\$3.6** million to **\$6.4** million respectively. Average annual taxable sales for Restaurant/Lodging for the region during the same period was **458%** higher during the third quarter when compared to the first quarter, ranging from **\$6.8** million to **\$37.8** million respectively. A local option sales taxes accruing to municipalities in Saco Bay would generate roughly \$89,000 and \$178,000 annually, based on 1% and 2% of total annual average restaurant sales respectively.
- The total municipal valuation of the Saco Bay region (Saco, OOB, and Scarborough) is over **\$2.4** billion, of which roughly **\$503** million represents beach-related property. Thus beach-related property in Saco Bay accounts for nearly **21%** of total municipal valuation.

Summary of Recommendations from the Saco Bay Planning Committee

Recommendations:


The *Saco Bay Beach Management Plan* is the first of three regional management plans to be developed for southern Maine beaches between 1999 and 2001. The *Saco Bay Planning Committee*, consisting of 16 coastal stakeholders, was organized to address beach management needs within the region. The plan addresses the earlier recommendations of the state-level Southern Maine Beach Stakeholder Group in the report titled *Improving Maine's Beaches*, finalized in April, 1998.

The committee has identified specific actions to be taken in an effort to improve beach management in the Saco Bay region. In developing its recommendations, the committee focused on the following topic areas:

- Natural resources management;
- Geological processes / sand management;
- Regulatory analysis; and
- Economic impact analysis of beaches

The Planning Committee has determined that the single most important issue relating to beach management in the region is the disequilibrium of sand resources throughout the Saco Bay. As is evidenced by the conclusions of two comprehensive studies (Moreau, 1979 and Kelley et. al., 1995), the bay is sand starved due to the current configuration of the jetty on the northern side of the mouth of the Saco River. The previously mentioned studies indicate that the jetty has caused accelerated erosion of beaches and dunes in the immediate vicinity of Camp Ellis. Recent study has also determined that the Saco River is the main source of sediment to the bay, with very little sand from other sources reaching area beaches (Kelley et. al., 1995). Presently, the predominant currents in Saco Bay flow in a clockwise direction from south to north (Kelley et. al., 1995). This northward flowing current, coupled with a lack of new sediment to replace the moving sand, has resulted in a disproportionate balance of sand resources throughout the bay. The sand in the southern end of the bay is eroding at an accelerated rate due to modifications made to the existing jetty in Camp Ellis, causing loss of public and private property and investments. Sand is accreting at an accelerated rate at the northern terminus of the bay causing costly and time consuming dredging activities in order to keep channels open to navigation.


The Committee has determined that due to past and current rates of erosion and accretion occurring in Saco Bay, the plan for the bay must include both short- and long-term actions. The following actions identify the most effective methods for mitigating the erosion and accretion problems plaguing Saco Bay.

 **Emergency action:** *The Committee recommends immediate financial, technical and administrative assistance from the United States Army Corps of Engineers (USACOE) and State of Maine to be used to increase the regional capacity to nourish beaches with sand in the Saco Bay region until a long-term solution can be implemented.*

The following options for nourishing area beaches with sand have been identified by the Committee:

- 1. Purchase of a mobile hydraulic dredge that can move sand from the northern end of the bay to the southern end.*
- 2. Leasing dredge equipment that has the capacity to move sand resources throughout the bay.*
- 3. Hiring a dredging contractor to perform the necessary sand nourishment activities.*

*Furthermore, the Committee recommends the annual removal of **25,000 cubic yards** of sand from the accreted shorefront in the Pine Point area and peripheral areas outside the federal channel in the Scarborough River Inlet, the north side of the jetty located at Camp Ellis, or other mutually decided locations identified by the Committee, to be placed on eroding beaches in Camp Ellis, Ferry and Western beaches in Scarborough, and along the entire Saco Bay beach system on an as-needed, when-need basis. This action will help to protect beach areas from coastal storms and tidal surges long enough to implement the long-term goals of the plan.*

 **Long-term action:** *Due to the current configuration of the federal jetty located on the north side of the Saco River in Camp Ellis, natural sand replenishment from the Saco River has been eliminated and erosion from onshore waves is exacerbated due to the structure being too high and tightly surfaced to allow breaching. The Committee recommends that the USACOE modify the existing jetty by lowering the height from **17 ft.** above Mean Low Water (MLW) to **12 ft.** above MLW at the shoreward end. In addition the shoreward end of the jetty should be resurfaced to increase porosity in order to reduce the severity of storm waves that roll along the jetty at high velocities and scour sand from the beach. The Committee also recommends that the USACOE remove **1000 ft.** from the seaward end of the jetty to reestablish the natural flow of sand from the Saco River to the bay's beaches.*

The above long-term action is the preferred option recommended by the Planning Committee given existing data and analysis available to date. However, the Committee recommends an engineering analysis and feasibility study in conjunction with the above long-term recommendations, by an independent Engineering firm, for identifying the effects of modifications to the Camp Ellis jetty. If the engineering analysis and feasibility study of the Camp Ellis jetty is concluded within a reasonable period of time and alternatives are identified that accomplish the goals of the Plan, these alternatives will take precedence over the long-term actions recommended above.

The second most important issue identified by the Planning Committee is the local / regional review of beach resource management. Under the current framework adopted by the state, sand dunes in Maine are sometimes regulated without the necessary input from municipalities of beach regions in which dunes are located. Identification of land uses and natural areas in the Saco Bay region using digital Geographic Information System (GIS) mapping software will greatly enhance the

ability of local, regional and state planners to assess natural resource values for specific coastal areas, which can be translated into sound policies for managing dunes and beach systems in southern Maine.

Regulatory efforts to manage beaches in southern Maine will undoubtedly be improved if regulators and community interests increase discussions and interactions in order to obtain a better mutual understanding of the issues. Currently, misunderstandings exist regarding specifics of the rules presently in place, including the rationale for some rules. Therefore, a better understanding of the underlying reasons for existing sand dune rules, as they pertain to specific case examples, will provide greatly needed outreach and education to local beachfront business and residential property owners, municipal planners, environmental interests and state regulators.

While most of the recommendations made by the Committee can be implemented under existing rules and laws, a need exists to work with state regulators to reform the permitting process to allow regular beach nourishment when feasible. Existing permitting requirements for coastal sand dredging assume that beach conditions change over the short-term, and, as a result, unnecessary and repetitive applications are currently required. A clear policy on beach nourishment practices from Maine's state agencies will help clarify the feasibility of using this strategy as an alternative to so-called "hard" engineering structures such as concrete or wood seawalls. Nourished beaches can provide protection from coastal storms, habitat for endangered species, and improved public beaches.

Finally, the Planning Committee feels that if the disproportionate balance of sand in the bay is to be managed effectively, and the regulatory framework surrounding sand dune management is to be optimized, then a greater level of regional coordination is necessary. Regional coordination offers an opportunity for local, state and federal stakeholders in Saco Bay to identify interests in the bay and design a management strategy that can be locally driven for maximum effectiveness.

In conjunction with the three critical issues identified above that are paramount to improving the management of beach resources within the bay, the Saco Bay Plan is intended to promote the sustainable management of identified beach resources within the region. Based on the needs of coastal interests in the Saco Bay region and the current regulatory structure in place, the committee supports the following recommendations.

Natural Resources Management

Policy: Improve state and local capacity to manage natural resources within beach areas of Saco Bay.

Action:

1. Develop a cooperative agreement among stakeholders regarding protection of plovers and terns in the Saco Bay Region. This agreement should be modeled on the process recently undertaken by the Town of Wells to manage plover habitat. Issues of immediate concern identified by the Saco Bay Planning Committee include improved access to private property by wildlife managers when needed to protect nesting birds and a “leash law” to protect birds from pets during nesting season (April-August).
2. Develop a GIS-based computer mapping system for analyzing natural resources in beach areas as they relate to current land use patterns. The database should consider land ownership by parcel, conservation and open space areas, historical trends of building permits and existing development, and critical habitat area for fish and wildlife species.
3. Improve water quality in estuarine waters to increase the amount of acreage available for recreational and commercial shellfishing.

Geological Processes / Sand Management

Policy: Reduce the accelerated rate of erosion in Saco Bay resulting from the federal jetty on the north side of the entrance to the Saco River. The following actions will help reduce beach erosion in Saco Bay:

Actions:

1. Stabilize high erosion areas in Camp Ellis and Ferry and Western beaches in Scarborough through beach nourishment methods that utilize sand resources from accreted sand at Pine Point and non-federal areas of the Scarborough Inlet as well as the north side of the Camp Ellis jetty and areas inside the jetty, until long-term solutions can be implemented.
 - a) Purchase, lease or contract a mobile sand dredge for the Saco Bay region that has the capacity to transport at least 25,000 cubic yards of sand on an annual basis to stabilize eroding beaches.
 - b) Add 20,000 cubic yards of sand to the beach areas immediately adjacent to the Camp Ellis jetty annually.
 - c) Add 5,000 cubic yards of sand to Ferry and Western beaches annually.
 - d) Add sand to other eroding beach areas in Saco Bay on an as-needed basis.

2. Alter the existing federal jetty at Camp Ellis to reestablish a natural flow of sand from the Saco River to all the beaches of Saco Bay and reduce accelerated erosion in the immediate vicinity. The following modifications are recommended:
 - a) Roughen the shoreward end of the jetty and lower it from its current height of 17 ft. above (MLW) to 12 ft. above MLW to stop accelerated waves from attacking the beach and allow waves to breach the jetty during storm events.
 - b) Remove 1000 ft. of rock material from the seaward end of the jetty to allow sand flow from the Saco River around the structure and into Saco Bay.

Sand Dune Regulation

Policy: Improve the effectiveness of the state's coastal sand dune rules by reviewing beach management issues at the regional level. The following actions will allow regional oversight of permits with input at the local level:

Actions:

1. Appoint a permanent regional advisory committee to advise beach regulation and management issues in Saco Bay in accordance with existing state laws and rules. This committee should consist of 4 representatives from each town in the Saco Bay region, including one municipal planner, one elected town/city councilor, one at-large member representing the general public, and one representative from each local conservation commission. The advisory committee would consult with applicable state and federal agencies, private nonprofit environmental organizations, and local residents and business owners representing beach interests. The proposed committee would have no regulatory authority over DEP regulated sand dune permits, and the DEP would continue to act as the sole regulator of permits under the current regulatory structure established by the state's sand dune rules.
2. Develop clear state guidelines for routine beach nourishment strategies for Saco Bay beaches, including multi-year permitting for approved sand nourishment areas with adequate monitoring of geological and ecological impacts. These policies should incorporate long-term nourishment strategies that include annual sand replenishment in areas identified by this Plan.
3. Recognize different standards and definitions between the state's shoreland zoning guidelines, municipal shoreland zoning ordinances and the sand dune rules. This should include recognition that shoreland zoning ordinances and DEP sand dune rules share overlapping jurisdiction in coastal areas. In order to improve permitting enforcement at the local level, overlapping jurisdiction in sand dune areas should be clearly defined to permit applicants and local code enforcement officers during the permitting process. The State's Guidelines for Municipal Shoreland Zoning Ordinances currently require the adoption of stricter standards in cases of overlapping jurisdiction with other ordinances, regulations or statutes.

Economic Impact Analysis / Tourism

Policy: Improve local and state capacity to measure and assess economic impact of beaches and associated tourism. The following actions will assist with measuring economic impact:

Actions:

1. Promote a rigorous study of the economic impact of tourism to each of the beaches in Saco Bay, including market and non-market values as identified by surveying beach users during the tourist season.
2. Develop methods to provide analysis of existing taxable sales and employment data by industry for identified beach areas in Saco Bay, as well as other pertinent economic indicators for measuring the value of beach-related areas in Saco Bay and the economic impact of tourism in the region.

Table 1
Summary of Recommendations for Beaches in Saco Bay

Recommend. #	Category	Action	Implemented by	Cost	Possible Funding
2.1a	Natural Resources	Increased environmental monitoring	Local land trust, schools and conservation commissions	\$15,000	Gulf of Maine Council grant; Maine Coastal Program grant; USEPA grant
2.1b	Natural Resources	Increased awareness of cultural and economic issues	Saco Bay Advisory Committee	\$3,000	Gulf of Maine Council; Maine Coastal program grant
2.1c	Natural Resources	GIS database of coastal resources	IF&W, DMR, SMRPC	\$20,000	Maine Office of Geographic Information Systems
2.1d	Natural Resources	Cooperative management agreement for bird habitat	Municipal planners	\$5,000	Saco Bay municipalities
2.1e	Natural Resources	Increase shellfish habitat	Conservation and shellfish management committees	\$3,000	DEP; Maine Coastal Program
2.1f	Natural Resources	Part-time baykeeper	Saco Bay Advisory Committee	\$5,000	Municipal governments in Saco Bay
Subtotal				\$61,000	
3.1a	Geological Processes	GIS database of erosion and accretion	MGS and MOGIS	\$10,000	MGS
3.1b	Geological Processes	Study and alteration of Camp Ellis jetty	Private engineering firm; US Army Corps of Engineers	Study: \$200,000 Modifications: \$2,086,448	Study: State of Maine/Saco Bay municipalities Modifications: USACOE
3.1c	Geological Processes	Establish a dune in Camp Ellis	USACOE; Saco Bay municipalities	See section 3.7 beach nourishment cost analysis	Saco bay municipalities
	Geological Processes	Nourish Saco Bay beaches	Saco Bay municipalities	\$116,200 per year (See section 3.7 beach nourishment cost analysis)	USACOE; Saco Bay municipalities—local option sales tax
	Geological Processes	Secure a dredge	Saco Bay municipalities	\$250,000 average per year	Saco Bay municipalities
Subtotal				\$2,576,200	

Table 1
Summary of Recommendations for Beaches in Saco Bay

Recommend. #	Category	Action	Implemented by	Cost	Possible Funding
4.1a	Sand Dune Regulation	Create the Saco Bay Advisory Committee	Saco Bay municipalities	\$5,000 per year	Saco Bay municipalities; Maine Coastal Program matching grant
4.1b	Sand Dune Regulation	Establish state guidelines for beach nourishment	DEP, DMR, IF&W, MGS	Minimal	Current programs operating budgets
4.1c	Sand Dune Regulation	Develop consistent standards for shoreland zoning	DEP	Minimal	Current programs operating budgets
Subtotal				\$5,000	
5.1a	Economic Impact	Economic impact study of Saco Bay beaches	Muskie School of Public Service; Margaret Chase Smith Center	\$50,000	ME/NH Sea Grant Program grant; local option sales tax
5.1b	Economic Impact	Develop economic indicators for Saco Bay beach region	Maine Office of Tourism; Maine Dept. of Community and Economic Development	Minimal	Current programs operating budgets
Subtotal				\$50,000	
Total				\$2,692,200	

{tc "C. ACKNOWLEDGEMENTS"}