

DEVELOPING NEW SOLUTIONS



CASCO BAY PLAN

The problems affecting Casco Bay today differ in fundamental respects from those of the past. The problems are complex and interrelated, involving dynamic interaction between land and sea, cultural activities, and natural processes.

DEVELOPING NEW SOLUTIONS

Introduction

Some of the problems affecting Casco Bay today differ in fundamental respects from those of the past. The basic regulatory and technological solutions that reduced end-of-pipe discharges do not address diffuse and pervasive problems like nonpoint-source pollution, toxic contamination, and habitat loss. These are ecosystem problems, not limited to a single natural resource or contained within any political boundary. The problems are complex and interrelated, involving dynamic interaction between land and sea, cultural activities, and natural processes.

The *Casco Bay Plan* is a major step toward solutions that will protect and foster our precious resources. Rather than reflecting a government mandate imposed through regulation and enforcement, the *Casco Bay Plan* was developed by concerned residents of the bay and watershed. The *Plan* reflects the diversity of people involved and the complex natural and cultural communities of Casco Bay.

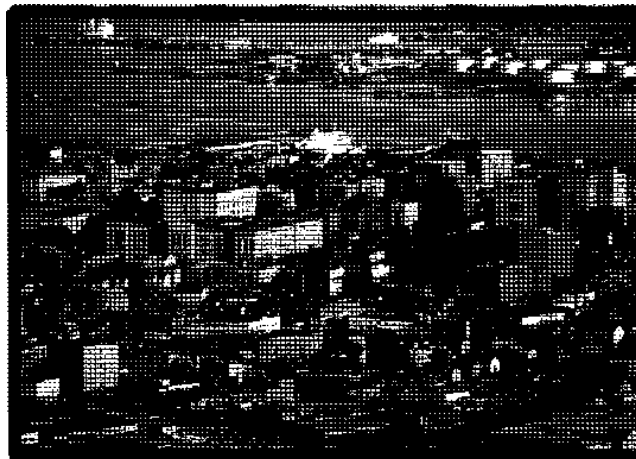


photo by Christopher Ayres

The solutions proposed in the *Plan* involve many interlocking issues and must be considered as part of a total ecosystem approach. Some actions may have both ecological and economic benefits (*e.g.*, reducing stormwater may benefit clam flats, habitat, and the economic viability of dredging), while other actions involve trading benefits and losses (*e.g.*, reopening clam flats may diminish shorebird habitat). To elucidate these connections, each of the actions recommended in the *Casco Bay Plan* has been cross-referenced with each of the five priority issues for resource protection.

Through an extensive planning process, the Casco Bay Estuary Project encouraged communication and cooperation among diverse interest groups and individuals throughout the watershed. The *Plan* sets forth actions to improve the health of Casco Bay through collaborative effort, efficient use of existing laws, and citizen stewardship. The *Plan* emphasizes creation of partnerships and approaches to managing the region that are governed not by political boundaries, but by the needs of the natural environment. Each action emphasizes reducing the current level of pollution, thereby diminishing the cost required to address problems in the future.

This chapter of the *Casco Bay Plan* outlines the need for actions and how they will be accomplished. More detailed chapters follow, describing how the *Plan* will be implemented and funded.

The *Plan* works to translate scientific information into effective policy-making and to promote innovative education and responsible stewardship. To focus its efforts and set achievable goals, the *Casco Bay Plan* selected five priority issues to address in the watershed:

- Stormwater in Casco Bay
- Clam Flats and Swimming Areas
- Habitat Protection
- Toxic Pollution in Casco Bay
- Stewardship

These five priority issues are described in the preceding chapters in terms of problems, trends, costs, and relevant regulations. Actions to address these issues are discussed in this chapter, grouped into the following four categories:

- Public Education
- Technical Assistance
- Regulations/Enforcement
- Planning and Assessment

Public Education Actions

The future of Casco Bay rests in the hands of the watershed's citizens and leaders. The success of virtually every action in the *Plan* depends on public education, involvement, and support. A citizenry that values the bay and its resources will support its restoration and protection.

Public education actions have been designed to serve several purposes:

- help build community awareness and appreciation for the bay, the watershed, and its ecosystem and history, as well as its intrinsic and economic values
- promote understanding about issues facing the bay and watershed, and demonstrate why they are important and how they can be resolved
- bridge the gap between scientific study and public policy by promoting dialogue and experiential activities
- foster a sense of stewardship for the bay and its watershed
- increase communication and cooperation

Each action recognizes the need for strong public support and individual commitment to solve the problems facing Casco Bay. About 270,000 people live in the watershed of Casco Bay. It is the cumulative impact of many individual actions that makes a difference.

The public education actions stress the need to provide cohesive information and educational opportunities at all age levels throughout the watershed. Without this strong foundation, we cannot expect to achieve the desired environmental change.

The *Plan* addresses education on all levels, including:

- K-12 schools
- Post-secondary institutions
- General information for the public
- Nonprofit organizations and others

Public Education Action #1

Fund High School Students' Research

- ▲ **NEED:** There is a need to encourage research funded through grant programs for schools within the watershed to conduct research related to the bay. A growing number of high schools are already pursuing bay- and watershed-related science curricula and many more opportunities exist.
- ▲ **HOW:** The Maine Coastal Program at the Maine State Planning Office has been instrumental in encouraging water quality monitoring by high schools. The Maine Coastal Program has an ongoing Shore Stewards/Partners in Monitoring Program that offers competitive mini-grants to support local water quality monitoring, outreach, and educational programs. This initiative should be used to encourage greater involvement by schools located in the Casco Bay watershed.
- ▲ **WHEN:** Year 2 and ongoing
- ▲ **WHERE:** Watershed-wide
- ▲ **WHO:** Maine Coastal Program/Maine State Planning Office in conjunction with area high schools
- ▲ **COST:** \$2,000 per grant, \$8,000 total per year
- ▲ **COST TO:** Maine Coastal Program
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Coastal Program, Maine State Planning Office, Shore Stewards Fund at the Maine Community Foundation, and the Maine Science Fund
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Public Education Action #2

Focus Post-Secondary Educational Programs on Casco Bay

- ▲ **NEED:** No area colleges or universities currently focus their studies or research on Casco Bay. These institutions could contribute greatly to the study of Casco Bay, in regard to both science and policy.
- ▲ **HOW:** Numerous possibilities exist for research and educational programs. The University of Southern Maine has recently begun an undergraduate environmental science and policy major. Graduate level economic and environmental research on conflicts and opportunities could also be pursued through the University of Southern Maine's Muskie Institute. Bowdoin College is developing a Center for Marine Studies, and Southern Maine Technical College has several marine programs. Local groups and agencies can also benefit from the work of student interns. Summer interns from Bates College work with the Lakes Environmental Association. Another possibility is to encourage the Sea Grant Program at the University of Maine, currently in Orono, to focus on Casco Bay and collaborate with the University of Southern Maine. The Casco Bay Implementation Committee (as described in Chapter 9) can work with these institutions and research opportunities at other institutions of higher learning.
- ▲ **WHEN:** Years 3-5
- ▲ **WHERE:** Casco Bay region
- ▲ **WHO:** The Casco Bay Estuary Project will coordinate with area colleges and universities including the University of Southern Maine, Southern Maine Technical College, Bowdoin College, University of New England, University of Maine, and the Sea Grant Program at the University of Maine
- ▲ **COST:** Not yet determined
- ▲ **COST TO:** Colleges or universities
- ▲ **POTENTIAL FUNDING SOURCES:** Area colleges and universities
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Public Education Action #3

Conduct a Comprehensive Campaign to Promote Sound Household Practices

- ▲ **NEED:** Individual actions and attitudes play a major role in protecting the bay. Many citizens would like to “do the right thing” but are not sure what that is. Other citizens are not aware of the impacts caused by simple household practices. A comprehensive campaign to promote sound household practices is needed to reduce domestic sources of water pollution.
- ▲ **HOW:** Television, cable, and radio stations in the area have shown a strong interest in supporting environmental causes and raising awareness about Casco Bay. Public service announcements would be developed to educate the public about sound lawn and garden care, household chemical disposal, car maintenance, septic system maintenance, vegetative planting, and other everyday actions that affect water quality. Information could also be distributed through Casco Bay Lines, marinas, realtors, and garden supply centers. These materials will be produced to be useful throughout the state.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Radio, cable television, network television stations in greater Portland, and regional businesses
- ▲ **WHO:** A task force created by the Casco Bay Estuary Project, to include area realtors, bankers, television and radio stations, business leaders, environmental organizations, University of Maine Cooperative Extension, Maine Coastal Program/Maine State Planning Office, Maine Department of Environmental Protection’s Nonpoint Source Program, U.S. Natural Resource Conservation Service, U.S. Fish and Wildlife Service’s Gulf of Maine Project, and others
- ▲ **COST:** \$20,000 per year
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Media and businesses in concert with U.S. Environmental Protection Agency and Maine Coastal Program funds
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Public Education Action #4

Educate Boaters About Low-Impact Practices, Non-Toxic Boat Products, and the Need to Protect Sensitive Habitats

- ▲ **NEED:** Casco Bay and the lakes in the watershed are used extensively by recreational and commercial boaters, yet they receive virtually no information about low-impact boating practices. In focus groups held by the Casco Bay Estuary Project, participants frequently voiced the need to educate boaters about habitat protection, non-toxic supplies, and proper disposal of debris, septic waste, and used oil. Public and private marinas provide ideal locations for boater education.
- ▲ **HOW:** Develop materials for distribution through marinas and towns. These materials will be produced to be useful throughout the state. Work with recreational boating groups toward awareness of coastal habitat concerns and voluntary guidelines.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Distribute through marinas, towns, public boat ramps, state parks, boatyards, yacht clubs, and other boating groups and businesses
- ▲ **WHO:** A coalition of locally based groups interested in boater education with support and guidance from the Maine Coastal Program at the Maine State Planning Office
- ▲ **COST:** \$10,000 first year; \$3,000 each year thereafter
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Coastal Program/State Planning Office; Post-CCMP funding from U.S. Environmental Protection Agency and Clean Vessel Act funding from U.S. Fish and Wildlife Service
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Public Education Action #5***Develop an Environmental Habitat Kit
and Guide Maps to Casco Bay
for the General Public***

- ▲ **NEED:** A wide variety of people use Casco Bay for recreation but don't understand the importance of specific habitats. A habitat kit and guide maps would encourage interested citizens to become more familiar with the bay and understand the adverse impact of certain activities.
- ▲ **HOW:** Prepare a field guide with habitat information and maps.
- ▲ **WHEN:** Year 4
- ▲ **WHERE:** Distribute the kits to boaters and recreational users of Casco Bay via marinas, the Casco Bay section of the Maine Island Trail Association, Casco Bay Lines, Maine Audubon Society, and other organizations and businesses
- ▲ **WHO:** A task force will be created, with an area nonprofit organization as coordinator, to develop and distribute the field guide. The task force will include the U.S. Fish and Wildlife Service's Gulf of Maine Project, U.S. National Marine Fisheries Service, Maine Department of Marine Resources, and Maine Department of Inland Fisheries and Wildlife, along with area nonprofit groups and others.
- ▲ **COST:** \$25,000
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCE:** U.S. Fish and Wildlife Foundation
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Habitat Protection
 - √ Stewardship

Public Education Action #6

***Create an Educational Site
Demonstrating How Vegetation
Reduces Stormwater Runoff***

- ▲ **NEED:** Few people understand the importance that vegetative plantings and the use of best management practices play in minimizing stormwater runoff and stabilizing shorelines. Planting a vegetated buffer strip (with accompanying educational signage) in a suitable and prominent public location would educate the public about the role landscaping can play in reducing water pollution.
- ▲ **HOW:** Demonstrate the use of certain best management practices to treat stormwater runoff from a parking area. The City of Portland's Back Cove area offers a visible and heavily used site.
- ▲ **WHEN:** Years 1, 2, and 3
- ▲ **WHERE:** Back Cove shoreline, near Baxter Boulevard parking lot
- ▲ **WHO:** The City of Portland and the Maine Department of Environmental Protection, in conjunction with the Cumberland County Soil and Water Conservation District
- ▲ **COST:** \$59,000
- ▲ **COST TO:** City of Portland, Maine Department of Environmental Protection, and Cumberland County Soil and Water Conservation District
- ▲ **POTENTIAL FUNDING SOURCE:** U.S. Environmental Protection Agency 319 Funds and the City of Portland
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Stewardship

Public Education Action #7

Hold “State of the Bay” Conferences

- ▲ **NEED:** Sharing information about Casco Bay pollution and use issues currently takes place in a piecemeal manner among a wide variety of groups. Conferences allow for consistent exchange of monitoring and scientific information, support ongoing dialogues and problem-solving, and further action to protect the bay and its watershed.
- ▲ **HOW:** Plan and hold a conference (to include identifying key discussion issues, scientific data to be presented, and speakers).
- ▲ **WHEN:** Year 2 and then biennially
- ▲ **WHERE:** Greater Portland
- ▲ **WHO:** Casco Bay Estuary Project with co-sponsors
- ▲ **COST:** \$10,000 per conference
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Coastal Program/Maine State Planning Office, foundation support, Sea Grant Program at University of Maine, business and corporate sponsors, and Post-CCMP funds from the U.S. Environmental Protection Agency
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Public Education Action #8

***Extend the State Planning Office's New
"Marine Volunteer Program" to Casco Bay***

- ▲ **NEED:** Volunteers in Casco Bay, with a minimum of financial and technical assistance, can work to inform citizens about the importance of coastal resources. The Maine Coastal Program at the Maine State Planning Office manages a new Penobscot Bay Marine Volunteer Program that uses trained volunteers to lead coastal protection and education projects. Working with the Maine State Planning Office, additional volunteers could focus on Casco Bay.
- ▲ **HOW:** The Maine Coastal Program/State Planning Office could establish a second volunteer program in Casco Bay, possibly coordinating with University of Maine Cooperative Extension for training.
- ▲ **WHEN:** Years 2-4
- ▲ **WHERE:** Casco Bay
- ▲ **WHO:** Maine Coastal Program/State Planning Office, in conjunction with Cooperative Extension in Cumberland County and Friends of Casco Bay and other volunteers
- ▲ **COST:** \$30,000
- ▲ **COST TO:** Maine Coastal Program/Maine State Planning Office
- ▲ **POTENTIAL FUNDING SOURCE:** Maine Coastal Program/Maine State Planning Office
- ▲ **PRIORITY ISSUE ADDRESSED:** √ Stewardship

Public Education Action #9

***Continue Friends of Casco Bay's
Successful Volunteer Water Quality
Monitoring Program***

- ▲ **NEED:** The Friends of Casco Bay has conducted a successful volunteer water quality monitoring program for the past three years. More than 150 volunteers have been involved in the program, which includes program planning and coordination, training the volunteers in quality assurance/quality control procedures, data management, and reporting of the results. These volunteers have become true stewards of the bay and provide valuable information about the health of the bay through both sampling and observation.
- ▲ **HOW:** The Friends of Casco Bay would continue to administer the volunteer monitoring program for Casco Bay.
- ▲ **WHEN:** Annually
- ▲ **WHERE:** Casco Bay
- ▲ **WHO:** Friends of Casco Bay
- ▲ **COST:** \$40,000 per year (An additional \$25,000 per year is included in the monitoring plan for profile monitoring from the Friends of Casco Bay's boat.)
- ▲ **COST TO:** Casco Bay Estuary Project, in conjunction with Friends of Casco Bay fundraising efforts
- ▲ **POTENTIAL FUNDING SOURCE:** Not yet determined
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stewardship
 - √ Habitat Protection

Technical Assistance Actions

Technical assistance is defined as providing specific, practical education to target audiences that have the ability to change actions or behavior. Technical assistance programs offer proactive information that recipients can apply in making decisions. In some cases, they provide the only source of environmental education for groups whose actions affect Casco Bay.

Municipalities play a vital role in protecting Casco Bay and are a primary target for technical assistance. Home-rule grants municipalities broad authority to plan for and regulate land use within their communities. They can also influence the actions of residents through standards that govern land use activities, education in the schools, and types of community services provided.

While many municipalities have professional staff, most local decisions are made by volunteers who serve on town councils (or boards of selectmen) and planning boards. Technical assistance directed at these individuals can have a significant impact on their decision-making.

Businesses are another important audience for technical assistance. Many regional businesses welcome assistance that will help them reduce the environmental impacts of their activities, often resulting in cost savings.

The following set of actions is intended to be part of a comprehensive Technical Assistance Program (delivered through the coordinated efforts of existing agencies that currently provide assistance within the watershed). Actions range from field training on best management practices for municipal road crews and private contractors to individualized pollution-prevention assistance for businesses and assistance for local shellfish committees that want to reopen closed clam flats.



photo by Christopher Ayres

Technical Assistance Action # 1

***Provide Technical Assistance
to Help Reopen Clam Flats***

- ▲ **NEED:** Currently, 37 percent of Casco Bay’s clam flats are closed (as of May 1995). When provided with information on the causes of closure and the costs and benefits of reopening areas, municipalities, municipal boards, and volunteers can play a pivotal role in reopening flats.
- ▲ **HOW:**
 - Continue the work of the Maine Department of Marine Resources and provide an informational summary of its work in training volunteers in conducting shoreline surveys and volunteer water quality monitoring.
 - Describe and enhance communication between the Maine Department of Marine Resources, Maine Department of Environmental Protection, and municipalities for the overboard discharge financing review process and the small community grants program.
 - Obtain increased commitment from municipalities to correct pollution sources by demonstrating the value to the town of opening shellfish areas.
 - Work at providing a continuing funding source for these actions.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Efforts will be directed at municipalities around the bay, particularly those with the largest acreage of closed flats. Candidate towns include Brunswick, Cumberland, Falmouth, Freeport, Harpswell, Long Island, Phippsburg, Portland, Yarmouth, and West Bath.
- ▲ **WHO:** The Maine Department of Marine Resources will provide training in conducting shoreline surveys and water quality monitoring, and assistance in shellfish area management. The Maine Department of Environmental Protection will provide information/coordination on funding for overboard discharge removal and the small community grant program. The Maine State Planning Office and/or Maine Department of Human Services will provide training programs on septic system management. The U.S. Natural Resources Conservation Service and local soil and water conservation districts can assist in developing treatment options. The Casco Bay Estuary Project will provide coordination where necessary, and research possible funding sources. The Friends of Casco Bay will work with communities on reopening clam flats.
- ▲ **COST:** \$80,000 in Year 1; \$10,000 per year thereafter
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Gulf of Maine Council, Maine Department of Marine Resources, Maine Department of Environmental Protection, Maine Coastal Program/Maine State Planning Office, municipalities, and others
- ▲ **PRIORITY ISSUE ADDRESSED:** ✓ Clam Flats and Swimming Areas

Technical Assistance Action #2

Provide Technical Assistance to Monitor and Open Public Swimming Areas

- ▲ **NEED:** Few public swimming areas in Casco Bay are monitored for bacterial pollution, which poses a potential public health risk. While municipalities are responsible for issuing swimming advisories when beaches are polluted, most have no beach management programs in place and no knowledge of ambient water quality.
- ▲ **HOW:** To improve municipal management of public swimming areas in Casco Bay, it is necessary to:
 - inventory public swimming areas
 - establish municipal programs to monitor water quality at swimming beaches and provide public information
 - conduct sanitary surveys on pollution sources, as needed
 - eliminate pollution sources, as necessary

A coordinated technical assistance program would be designed to assist municipalities to gather this information and establish ongoing management programs where appropriate.

- ▲ **WHEN:** Year 1
- ▲ **WHERE:** Coastal communities with public swimming areas
- ▲ **WHO:** The Maine Department of Environmental Protection and Maine Department of Human Services to provide technical assistance and laboratory analysis with assistance from the Friends of Casco Bay
- ▲ **COST:** \$0
- ▲ **COST TO:** Maine Department of Environmental Protection
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Department of Environmental Protection, municipal funds, Friends of Casco Bay
- ▲ **PRIORITY ISSUE ADDRESSED:** ✓ Clam Flats and Swimming Areas

Technical Assistance Action # 3

***Train Installers and Pumpers
of Septic Systems***

- ▲ **NEED:** Improperly installed septic systems can cause septic-system failure, prompting closure of nearby shellfish beds and swimming areas. Focus groups organized by the Casco Bay Estuary Project repeatedly voiced a need for training local contractors in septic-system installation.
- ▲ **HOW:** A training program would be offered to instruct contractors on septic-system installation techniques and pumpers on septic-system inspection techniques. Methods to notify residents, including seasonal residents, will be researched.
- ▲ **WHEN:** Yearly, beginning Year 1
- ▲ **WHERE:** Watershed-wide
- ▲ **WHO:** A designated technical assistance provider, in conjunction with the Maine Department of Human Services and the Portland Water District, would provide training programs (with municipalities sending installers and pumpers from their communities).
- ▲ **COST:** Maine Department of Human Services staff time and Casco Bay Estuary Project staff time, estimated at \$10,000 annually
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Department of Human Services and Casco Bay Estuary Project
- ▲ **PRIORITY ISSUE ADDRESSED:** ✓ Clam Flats and Swimming Areas

Technical Assistance Action # 4

Provide Training in Best Management Practices for Contractors, Farmers, Public Works Crews, Road Commissioners, and Municipal Boards and Staff

- ▲ **NEED:** Best management practices (BMPs) are effective techniques for reducing stormwater runoff and erosion from developed and agricultural landscapes. Although the state offers a series of manuals that outline these practices, many municipal and private-sector workers are not yet using them.
- ▲ **HOW:** A technical assistance program would reach targeted audiences who conduct or review land use activities that can cause erosion, stormwater runoff, and sedimentation (*e.g.*, municipal road crews, public works crews, contractors, farmers [including recreational farmers], and municipal staff and boards). The Maine Department of Environmental Protection has established a Nonpoint-Source Training Center to provide training programs on erosion/sedimentation BMPs, stormwater BMPs, and marina BMPs. Target audiences include contractors, engineers, planners, and marina operators.
- ▲ **WHEN:** Yearly, beginning Year 1
- ▲ **WHERE:** Initially 12 municipalities bordering Casco Bay, expanding as funds become available
- ▲ **WHO:** The technical assistance provider will coordinate training with towns and the Maine Department of Environmental Protection Nonpoint-Source Training Center, Maine Department of Transportation Local Roads Programs, Natural Resources Conservation Service, Maine Municipal Association, Portland Water District, Cumberland County Soil and Water Conservation District, and Greater Portland Council of Governments.
- ▲ **COST:** \$10,000 yearly
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Department of Environmental Protection, Maine Department of Transportation, U.S. Consolidated Farm Services Agency, and training fees
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Toxic Pollution in Casco Bay

Technical Assistance Action # 5

Establish a Reduction and Management Program for Toxic Pollutants in Casco Bay Communities and Small Businesses

- ▲ **NEED:** Many sources of toxic pollution can be reduced or eliminated through responsible household management and pollution prevention (e.g., non-toxic lawn and garden care; proper disposal of oils, batteries, and hazardous materials; clean car care and boat maintenance; and reduced automobile use). Reduced generation of toxics could mean cleaner sediments and less contaminant accumulation in seafood.
- ▲ **HOW:** A task force would be formed to develop a pilot program for toxic pollutant disposal, modeled after the City of Lewiston’s Toxic Plan.
- ▲ **WHEN:** Task force convening in Year 2, with program beginning in Year 4
- ▲ **WHERE:** Pilot project in the watershed
- ▲ **WHO:** The task force would coordinate with municipalities, the Maine Department of Environmental Protection Pollution Prevention Program, Maine Coastal Program/Maine State Planning Office, Regional Waste Systems, U.S. Coast Guard, and others to design a toxic pollutants disposal program for Casco Bay.
- ▲ **COST:** \$10,000 per year in Years 4 and 5
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Department of Environmental Protection Pollution Prevention Program
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Technical Assistance Action #6

Develop and Implement Action Plans for Sub-watershed Areas

- ▲ **NEED:** Locally developed action plans to prevent and control nonpoint-source pollution in sub-watersheds of the larger Casco Bay watershed are a vital piece of the puzzle in protecting not only Casco Bay, but also smaller, local areas of importance. Five sub-watersheds exist and make up the Casco Bay watershed, Royal River watershed, and Sebago Lake watershed. Both the Presumpscot River and Royal River watersheds have initiated locally driven planning processes for water quality protection. Sub-watershed planning is needed in the Coastal, Fore River, and Sebago Lake watersheds.
- ▲ **HOW:** Using the Nonpoint Source Pollution Potential Index and a prioritization scheme under development by the Maine Department of Environmental Protection, sub-watersheds will be evaluated for potential nonpoint-source pollution impacts. Field-screening of stream habitat and water quality will be conducted to supplement the screening. Based on the prioritized list developed, education, outreach, and training will take place. The Maine Department of Environmental Protection will help raise awareness of nonpoint-source pollution issues at the municipal level. Where local support for prevention or restoration activities exists (or can be developed), professionals can help local groups develop watershed projects using watershed management guidelines now under development by the Maine Department of Environmental Protection.
- ▲ **WHEN:** Years 3 and 4
- ▲ **WHERE:** Coastal watershed, Fore River watershed, and Sebago Lake watershed
- ▲ **WHO:** Locally driven, working with such groups as the Maine Department of Environmental Protection, Maine State Planning Office, Portland Water District, Cumberland County Soil and Water Conservation District, and Greater Portland Council of Governments
- ▲ **COST:** Determined by size and scope of individual projects
- ▲ **COST TO:** Partners involved in projects
- ▲ **POTENTIAL FUNDING SOURCE:** U.S. Environmental Protection Agency 319 and 604 (b) funds administered by the Maine Department of Environmental Protection, locally raised funds, and municipalities
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Technical Assistance Action #7

***Provide Technical Assistance
Necessary for Habitat Protection***

- ▲ **NEED:** With less than 5 percent of Maine’s land in public ownership, voluntary conservation measures at the local level are needed to protect important habitats in the watershed. Local governments and groups need information about high-value habitats in their jurisdiction and assistance in pursuing non-regulatory protection of habitat.

The U.S. Fish and Wildlife Service has completed a study of habitat values in Casco Bay that documents existing usage and explores future habitat protection issues (through a “build-out” analysis of land areas available for development).

- ▲ **HOW:** A technical assistance program would offer the following support to municipalities, land trusts, and conservation commissions:
 - Collect and distribute information on habitat locations, values, and uses.
 - Provide wildlife biologists to advise local groups on biological aspects of habitat protections.
 - Work with communities to protect habitat areas documented by Maine Department of Inland Fish and Wildlife and in the U.S. Fish and Wildlife Service habitat analysis.
 - Develop a coordinated approach to voluntary conservation activities that focus on work with landowners to encourage actions to protect habitat.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** 12 coastal communities bordering Casco Bay
- ▲ **WHO:** The Casco Bay Estuary Project, in conjunction with municipalities and regional land conservation groups, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Service, Maine Department of Marine Resources, and Maine Department of Inland Fisheries and Wildlife
- ▲ **COST:** \$10,000 per year
- ▲ **COST TO:** U.S. Fish and Wildlife Service, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, foundations
- ▲ **POTENTIAL FUNDING SOURCE:** Not yet determined
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Habitat Protection
 - √ Stewardship

Technical Assistance Action #8

***Conduct Pollution-Prevention Audits for
Businesses/Industries that Affect Casco Bay***

- ▲ **NEED:** Businesses and industries that use toxic chemicals can pollute Casco Bay through contaminated stormwater runoff caused by accidental spillage, improper storage, disposal of hazardous materials or direct discharge into the sewer system.
- ▲ **HOW:** The Maine Department of Environmental Protection Pollution Prevention Program will identify the business/industry sector with the greatest risk of pollution (based on types and quantities of toxic materials stored on-site). These businesses will be contacted by the Maine Department of Environmental Protection and offered pollution prevention audits.

In addition, a Pollution Prevention Resource Library will be established at the Southern Maine Office of the Department of Environmental Protection for use by area businesses and interested citizens.

- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Casco Bay watershed
- ▲ **WHO:** Maine Department of Environmental Protection Pollution Prevention Program
- ▲ **COST:** Per individual project
- ▲ **COST TO:** Maine Department of Environmental Protection
- ▲ **POTENTIAL FUNDING SOURCE:** Maine Department of Environmental Protection
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Toxic Pollution in Casco Bay

Regulatory/Enforcement Actions

There are countless possible actions that could be taken to protect and improve the health of the Casco Bay watershed, including greater enforcement of existing regulations (or measures that require legal authority). The *Casco Bay Plan* has deliberately chosen not to pursue environmental protection through a major expansion of current regulations, emphasizing — instead — the need for information, education, and technical assistance as the means to change the behavior of individuals and groups.

However, there are existing regulations that require improvement or enforcement, and certain issues that require the authority of a regulation to have sufficient impact. For that reason, this portion of the *Casco Bay Plan* recommends specific regulatory actions.

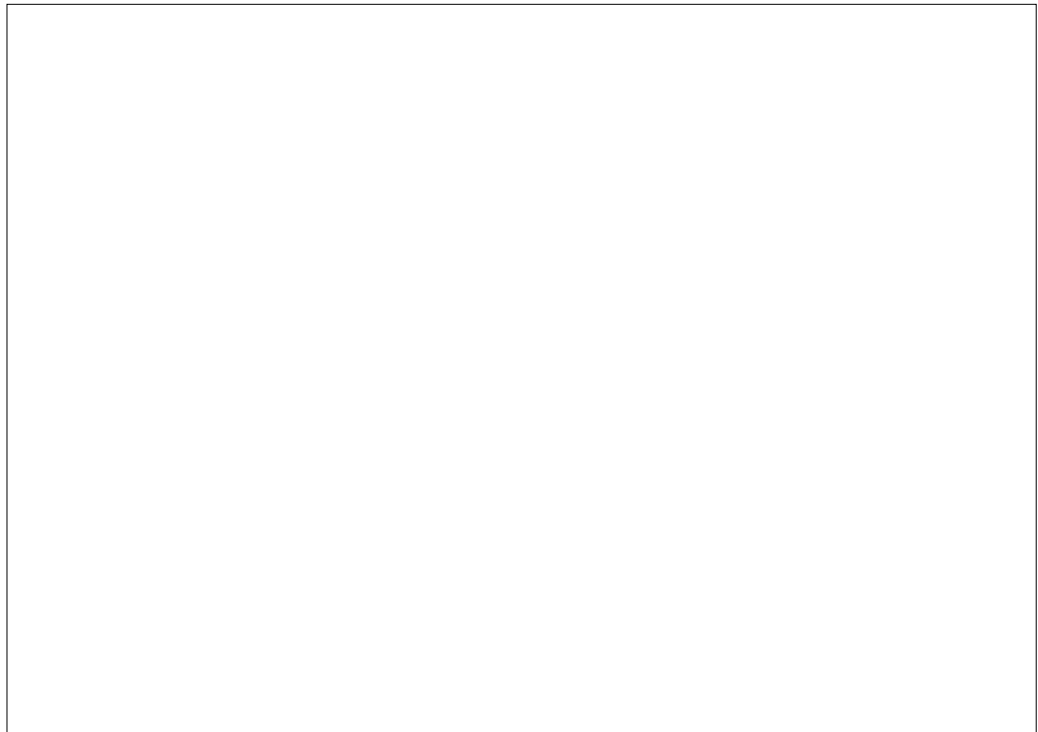


photo by Christopher Ayres

Regulatory/Enforcement Action #1

Clarify the Use of the Natural Resource Protection Act for Habitat Protection

- ▲ **NEED:** Habitat protection can be accomplished through both regulatory and non-regulatory means. Current efforts are being focused on using non-regulatory, voluntary approaches such as easements, land purchases, and cooperative agreements with willing landowners. In some instances, a voluntary approach may not be available. The Natural Resource Protection Act (38 MRSA SS 480-A to 480 V) is the primary state statute that provides the regulatory ability to protect habitat in Maine. However, protection under the law is not realized until the Maine Department of Inland Fisheries and Wildlife designates and maps “significant wildlife habitat.” Currently, it is not clear when the Maine Department of Inland Fisheries and Wildlife will map habitat areas to enable protection under the Natural Resources Protection Act. A policy is needed that defines when Inland Fisheries and Wildlife will and will not map and what will be the alternative methods used for habitat protection.
- ▲ **HOW:** The Maine Department of Inland Fisheries and Wildlife and the Maine Department of Environmental Protection will develop a policy that will outline when the Natural Resource Protection Act will and will not be used to protect “significant wildlife habitats” in Maine. The policy will outline when the regulatory approach will be triggered and when alternative protection methods will be used.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Statewide
- ▲ **WHO:** The Maine Department of Inland Fisheries and Wildlife will be responsible for establishing a policy for mapping significant wildlife habitats.
- ▲ **COST:** \$0
- ▲ **COST TO:** Maine Department of Inland Fisheries and Wildlife
- ▲ **POTENTIAL FUNDING SOURCE:** Maine Department of Inland Fisheries and Wildlife
- ▲ **PRIORITY ISSUE ADDRESSED:** √ Habitat Protection

Regulatory/Enforcement Action #2

***Monitor Enforcement of Combined Sewer
Overflow Reduction Plans in Portland,
South Portland, and Westbrook***

- ▲ **NEED:** Portland, South Portland, Westbrook, and the State of Maine all have combined sewer overflows that reduce water quality in the bay. Given that each is under a consent agreement with the U.S. Environmental Protection Agency and/or Maine Department of Environmental Protection to minimize sources of stormwater and sewage, their progress should be monitored to ensure that implementation of plans remains on schedule.
- ▲ **HOW:** Each municipality has prepared a Combined Sewer Overflow Reduction/Treatment Plan that outlines a schedule for implementation. Although Maine’s Department of Environmental Protection and the U.S. Environmental Protection Agency will be enforcing these plans, a non-governmental group should also monitor progress.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Portland, South Portland, and Westbrook
- ▲ **WHO:** Friends of Casco Bay, Maine Department of Environmental Protection, U.S. Environmental Protection Agency
- ▲ **COST:** \$0
- ▲ **COST TO:** Friends of Casco Bay, Maine Department of Environmental Protection, U.S. Environmental Protection Agency
- ▲ **POTENTIAL FUNDING SOURCES:** Bonds, user fees, federal funds
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay
 - √ Stewardship

Regulatory/Enforcement Action #3

***Adopt Minimum Standards for
Stormwater Quality in State and
Municipal Regulatory Programs***

- ▲ **NEED:** Existing state and municipal regulatory programs have not adopted a minimum standard for stormwater quality. Minimum stormwater quality standards have been developed and need to be included in state and municipal land use regulations.
- ▲ **HOW:** The Maine Department of Environmental Protection has included stormwater quality standards in the revised Site Location Act. Model ordinances have been developed for stormwater quality. The Maine State Planning Office will make these available to Casco Bay communities and coordinate technical assistance through appropriate organizations.
- ▲ **WHEN:** Year 2
- ▲ **WHERE:** Statewide
- ▲ **WHO:** Maine Department of Environmental Protection and Maine State Planning Office
- ▲ **COST:** \$0 (staff time)
- ▲ **COST TO:** Cost to control stormwater will be to those with development projects.
- ▲ **POTENTIAL FUNDING SOURCE:** Not applicable
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Clam Flats and Swimming Areas
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay

Regulatory/Enforcement Action #4

Comply with the Pumpout Law

- ▲ **NEED:** Maine's Pumpout Law (MRSA Title 38, section 423B) was passed in 1989, requiring some marinas to provide pumpouts for boaters. Although compliance was required by June 1, 1990, there has been no subsequent examination of compliance or enforcement action. The law does not specify which state agency is responsible for ensuring compliance.
- ▲ **HOW:** The Maine Department of Environmental Protection will work to attain full compliance.
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Watershed-wide
- ▲ **WHO:** The Maine State Planning Office maintains a database of marine facilities to track marinas. The Maine Department of Environmental Protection enforces the law. Friends of Casco Bay operates the mobile pumpout boat. The U.S. Coast Guard can help track compliance. Additionally, the Maine State Planning Office has funds available to assist marinas in purchasing pumpout facilities.
- ▲ **COST:** \$0
- ▲ **COST TO:** Maine Department of Environmental Protection
- ▲ **POTENTIAL FUNDING SOURCE:** Not yet determined
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Clam Flats and Swimming Areas
 - √ Stewardship

Regulatory/Enforcement Action #5

Improve Local Enforcement of the Subsurface Wastewater Disposal Rules

▲ **NEED:** Lax enforcement of the State Subsurface Wastewater Disposal Rules allows failing septic systems to pollute clam flats and water quality. The Maine Department of Human Services is required to review municipal enforcement regularly but this has not occurred. The following factors contribute to the current enforcement problems:

- Septic systems are only inspected during construction, so there is no assurance that an installed system provides adequate wastewater treatment.
- Enhanced quality control for plumbing inspectors is needed.
- Contractors who install systems are not licensed or monitored.
- Compensation of licensed plumbing inspectors does not encourage enforcement activities.

The Maine Department of Human Services should enforce current laws and make changes necessary to encourage greater enforcement (through compensation or revocation of licensed plumbing inspectors certification for inadequate performance and a compensation schedule that acknowledges enforcement). Municipalities should enforce the Subsurface Wastewater Disposal Rules, using them to protect their clam flats, swimming areas, and water quality.

▲ **HOW:** The Maine Department of Human Services can increase enforcement of existing state laws and determine which amendments are needed to encourage further enforcement. Municipalities can work with their licensed plumbing inspectors to review the range of current activities and establish procedures for greater enforcement. In coastal communities with clam flats and swimming areas, the plumbing inspector can be actively involved in shoreline surveys, correcting sources of wastewater pollution that impact clam flats and swimming areas. The Maine Department of Environmental Protection has authority to take action in cases where septic systems malfunction into surface waters.

▲ **WHEN:** Year 1 and ongoing

▲ **WHERE:** Statewide

▲ **WHO:** Municipalities and the Maine Department of Human Services

▲ **COST:** \$50,000 yearly

▲ **COST TO:** Maine Department of Human Services, for additional personnel to monitor local plumbing inspectors

▲ **POTENTIAL FUNDING SOURCE:** Maine Department of Human Services

▲ **PRIORITY ISSUES ADDRESSED:** √ Clam Flats and Swimming Areas
 √ Stewardship

Regulatory/Enforcement Action #6

***Require Proof of Legal Waste Disposal
Upon Transfer of Property***

- ▲ **NEED:** Many septic systems in the municipalities surrounding Casco Bay were installed before the plumbing code was updated in 1974, and so may provide little or no treatment of sewage. Given their potential deleterious effect on water quality, these systems must be updated if clam flats and swimming areas are to be kept open or reopened.
- ▲ **HOW:** Develop regulations requiring those who transfer property to demonstrate that their system meets the current code. A task force would be created to determine the appropriate methods for determining if a septic system should be updated prior to transfer.
- ▲ **WHEN:** Year 2
- ▲ **WHERE:** Shoreland zone and watersheds that impact clam flats and swimming areas
- ▲ **WHO:** The Casco Bay Estuary Project will convene a task force of bankers, plumbing inspectors, site evaluators, and staff of the Maine State Planning Office, Maine Department of Environmental Protection, and Maine Department of Human Services, which should review regulations and propose changes to the Legislature.
- ▲ **COST:** \$0
- ▲ **COST TO:** Party transferring property
- ▲ **POTENTIAL FUNDING SOURCE:** Those transferring property
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Clam Flats and Swimming Areas
 - √ Stewardship

Planning and Assessment Actions

This *Plan* recognizes that the Casco Bay ecosystem and the human communities that share in it are dynamic, with needs and issues that evolve over time. The planning and assessment actions in this section outline additional study that is needed to guide future policies and activities.

Planning and Assessment Action #1

Develop Municipal Programs to Protect Water Resources and Clam Flats from Septic System Discharges

- ▲ **NEED:** Many towns have identified septic system/sewer issues in their comprehensive plans, but no programs currently exist to help municipalities regularly inspect and manage residential septic systems.
- ▲ **HOW:** The Casco Bay Estuary Project funded a study in the Town of Brunswick to assess methods for providing regular inspection and maintenance of septic systems. The study catalogued structural and non-structural methods, including development of a municipal wastewater management district. Other municipalities in the watershed could conduct a similar review of infrastructure (*i.e.*, sewage treatment plant capacity) and options for managing septic system maintenance.
- ▲ **WHEN:** Year 3 and ongoing
- ▲ **WHERE:** Watershed-wide
- ▲ **WHO:** Municipalities, with assistance provided by the Greater Portland Council of Governments, Maine State Planning Office, and the Maine Department of Human Services Division of Health Engineering
- ▲ **COST:** \$10,000 yearly
- ▲ **COST TO:** Municipalities and the Maine State Planning Office
- ▲ **POTENTIAL FUNDING SOURCE:** Maine Coastal Program/Maine State Planning Office
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Clam Flats and Swimming Areas
 - √ Stewardship

Planning and Assessment Action #2

Develop a Comprehensive Management Strategy for Dredged Material

- ▲ **NEED:** Dredging of rivers and harbors in Casco Bay is needed to sustain the economic and recreational value of harbors. However, disposal of dredged material has become expensive and difficult in cases where sediments contain toxic materials. The Maine State Planning Office is the ongoing coordinator of all state agencies on policy issues to address dredging concerns throughout the state.
- ▲ **HOW:** The Casco Bay Estuary Project would work with the Portland Harbor Waterfront Alliance and other groups and agencies on a strategy to:
 - Reduce input of toxic materials to harbor sediments
 - Assess, categorize, and quantify material that requires dredging
 - Develop practicable alternatives for contaminated dredged material disposal
 - Work with the U.S. Army Corps of Engineers to develop plans for closure (including remediation and restoration) of the Portland Harbor disposal sites when needed
 - Research selection of new sites
 - Improve dredging and disposal techniques
- ▲ **WHEN:** Year 1 and ongoing
- ▲ **WHERE:** Casco Bay
- ▲ **WHO:** The Casco Bay Estuary Project, working with the Portland Harbor Waterfront Alliance, Friends of Casco Bay, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. National Marine Fisheries Service, Maine State Planning Office, and state and federal natural resource agencies
- ▲ **COST:** \$15,000
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** Maine Coastal Program/Maine State Planning Office, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Habitat Protection
 - √ Toxic Pollution in Casco Bay

Planning and Assessment Action #3

Review Implementation of the National Shellfish Sanitation Program

- ▲ **NEED:** The Casco Bay Estuary Project has found that there is widespread public confusion about how the National Shellfish and Sanitation Program (NSSP) is administered in Maine. While the public (including clam diggers) understandably would like to maximize the area of open flats, public health is of overriding concern. Because the Casco Bay area is the most populated watershed in Maine, pollution problems are many. Certain areas in the foreseeable future may never be safe for the harvesting of shellfish. Additional areas, however, might be safely opened to shellfish harvesting in Casco Bay. An effort should be made to clear up some of this confusion.
- ▲ **HOW:** A public workshop will be convened by the Maine Department of Marine Resources to review, explain, and discuss the NSSP, its implementation, and possible areas of improvement in both increased acreage of flats open and increased public health. Workshop proceedings will be published and will be used to assist the Maine Department of Marine Resources in future planning and administration of the program.
- ▲ **WHEN:** Year 1
- ▲ **WHERE:** Casco Bay watershed area
- ▲ **WHO:** The Maine Department of Marine Resources, Friends of Casco Bay, municipal officials and shellfish committees, state legislators, State Attorney General's Office, U.S. Food and Drug Administration, and the public
- ▲ **COST:** \$0
- ▲ **COST TO:** Maine Department of Marine Resources
- ▲ **POTENTIAL FUNDING SOURCE:** Not yet determined
- ▲ **PRIORITY ISSUE ADDRESSED:** √ Clam Flats and Swimming Areas

Planning and Assessment Action #4

***Research the Impact of Tax Codes
on Habitat Conservation***

- ▲ **NEED:** For habitat to be preserved, it must be economically feasible for private landowners to maintain land in an undeveloped state. The state tax code and municipal implementation of the code must be reviewed in this context to determine their impact on private landowners.
- ▲ **HOW:** A private consultant would review the impact of the current state tax code, and see if municipal applications of the code are consistent. A task force of state and municipal representatives will review the consultant's findings to determine if changes should be proposed to the State Legislature.
- ▲ **WHEN:** Year 3
- ▲ **WHERE:** Statewide
- ▲ **WHO:** Working with representatives of the Maine Municipal Association, Maine Coast Heritage Trust, Island Institute, local land trusts, Maine Farm Bureau, Small Woodlot Association, private landowners, and others, a task force will design the scope of work, select an impartial consultant, and review the findings.
- ▲ **COST:** \$40,000
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCE:** Foundations
- ▲ **PRIORITY ISSUES ADDRESSED:** √ Habitat Protection

Planning and Assessment Action #5

***Develop a Plan to Restore Degraded
Habitat in Casco Bay***

- ▲ **NEED:** Ecological restoration could reverse some damage done by past development activities around Casco Bay. To restore the bay's health, more information is needed on the location and nature of degraded habitats, the type and cost of restoring these areas, the groups or agencies that could pursue restoration, and the possible funding sources. An agency or entity should be given responsibility for implementing the restoration plan.
- ▲ **HOW:** A private consultant would be retained to prepare a plan for restoring degraded habitats in Casco Bay.
- ▲ **WHEN:** Plan completed by Year 4
- ▲ **WHERE:** Coastal communities
- ▲ **WHO:** A task force with representatives from the Gulf of Maine Project of the U.S. Fish and Wildlife Service, Maine Department of Inland Fisheries and Wildlife, Maine Audubon Society, Maine Coast Heritage Trust, and others would oversee project design, consultant selection, and project implementation.
- ▲ **COST:** \$40,000 over 2 years
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, foundations, abutters, U.S. Army Corps of Engineers Restoration Program and Planning Assistance
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Habitat Protection
 - √ Stewardship

Planning and Assessment Action #6

Develop Biological/Environmental Indicators

- ▲ **NEED:** Water quality influences the types of plants and animals that will live in a lake, stream, river, or estuary. Alterations of the biological community can indicate chronic water quality impacts, while chemical water quality measures provide only a snapshot of current conditions. State water quality regulations provide for use of biological criteria, and freshwater criteria have been developed. Criteria for marine and estuarine waters, however, still need to be established.
- ▲ **HOW:** Biological/environmental indicators will be researched and tested in Maine so that a marine monitoring plan can be developed. Literature research on potential environmental indicators has begun, and will continue until suitable indicators are developed.
- ▲ **WHEN:** Years 3-5
- ▲ **WHERE:** Marine and estuarine waters of the coast of Maine
- ▲ **WHO:** The Maine Department of Environmental Protection will form a task force composed of representatives of the scientific community and others.
- ▲ **COST:** \$30,000 to \$50,000/year in the developmental stage; \$100,000 in the testing stage
- ▲ **COST TO:** Maine Department of Environmental Protection, U.S. Environmental Protection Agency, Gulf of Maine Program
- ▲ **POTENTIAL FUNDING SOURCES:** U.S. Environmental Protection Agency, Maine Department of Environmental Protection
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Toxic Pollution in Casco Bay
 - √ Habitat Protection

Planning and Assessment Action #7

Develop Sediment Quality Criteria and Sediment Quality Discharge Limits that Apply to Casco Bay

- ▲ **NEED:** There is a need for statewide sediment quality standards that apply to Casco Bay and reflect the published levels that the Maine Department of Environmental Protection and U.S. Environmental Protection Agency follow when making regulatory decisions. At present, there are some water quality standards that are published in the U.S. Environmental Protection Agency “Gold Book”; however, toxic contaminant levels in the water do not adequately predict or relate to sediment quality. Since it is cheaper to treat potential contamination prior to discharge, toxins in effluents and stormwater should be reduced to avoid contaminating sediment.
- ▲ **HOW:** The U.S. Environmental Protection Agency is developing sediment criteria that the Maine Department of Environmental Protection and Casco Bay Estuary Project could use to create sediment quality standards applicable to Casco Bay.
- ▲ **WHEN:** The statewide sediment quality standards will continue to be developed, a few each year, by the U.S. Environmental Protection Agency. Guidance on adapting these to Casco Bay should be developed in Year 3 by the U.S. Environmental Protection Agency. Once the U.S. Environmental Protection Agency develops sediment quality criteria, the Maine Department of Environmental Protection will be encouraged to develop discharge limits that apply to Casco Bay.
- ▲ **WHERE:** Casco Bay
- ▲ **WHO:** U.S. Environmental Protection Agency and Maine Department of Environmental Protection
- ▲ **COST:** Adapt sediment quality standards to Casco Bay if needed, \$20,000 to \$30,000; develop sediment quality discharge limits, \$100,000; adapt discharge limits, \$20,000
- ▲ **COST TO:** U.S. Environmental Protection Agency
- ▲ **POTENTIAL FUNDING SOURCE:** U.S. Environmental Protection Agency
- ▲ **PRIORITY ISSUE ADDRESSED:** √ Toxic Pollution in Casco Bay

Planning and Assessment Action #8

***Develop a Grant Program to Support
Local Habitat Protection Activities***

- ▲ **NEED:** To successfully protect important habitat, local groups need funding support. Many communities in the Casco Bay watershed have identified habitat protection as a priority in their comprehensive plans, but they lack money to carry it through the planning process to implementation. The work done to protect local habitats should be consistent with Maine Department of Inland Fisheries and Wildlife priorities and the U.S. Fish and Wildlife Service study (available from the Casco Bay Estuary Project) and communities' approved comprehensive plans.
- ▲ **HOW:** The Casco Bay Estuary Project, working in cooperation with federal and state wildlife agencies, will provide small grants to local governments and community groups for projects to establish plans to protect valuable habitat. These funds will be used for such items as legal research, acquisition plans, funding development, and plan preparation.
- ▲ **WHEN:** Year 2 and ongoing
- ▲ **WHERE:** Watershed-wide
- ▲ **WHO:** Casco Bay Estuary Project with input from others
- ▲ **COST:** \$10,000 in grants each year
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCES:** National U.S. Fish and Wildlife Service Foundation grants, Wildlife Habitat Development Funds from U.S. Consolidated Farm Services Agency
- ▲ **PRIORITY ISSUE ADDRESSED:** ✓ Habitat Protection

Planning and Assessment Action #9

***Research Whether State Subsurface
Wastewater Disposal Rules Adequately
Prevent Coastal Pollution***

- ▲ **NEED:** The State Subsurface Wastewater Disposal Rules may not be adequately preventing pollution, according to a study of Maquoit Bay conducted for the Casco Bay Estuary Project by Horsley & Witten, Inc. The study assumed that septic systems on Maine's rocky coast, even if constructed in accordance with the Maine State Plumbing Code, may still be seeping septic waste into coastal waters. A combination of shallow coastal soils and shallow depth to bedrock can produce septic system failure, even when no surficial signs of failure are evident over the septic system.
- ▲ **HOW:** The Maine Department of Human Services should review samples taken by Horsley & Witten, Inc., from Maquoit Bay and conduct further research on how regulatory changes could reduce pollution (*e.g.*, by promoting innovative alternatives to subsurface wastewater disposal systems).
- ▲ **WHEN:** Year 2
- ▲ **WHERE:** Coastwide
- ▲ **WHO:** A task force led by the Maine Department of Human Services along with Maine State Planning Office, Maine Department of Environmental Protection, and other interested parties
- ▲ **COST:** \$20,000
- ▲ **COST TO:** Casco Bay Estuary Project
- ▲ **POTENTIAL FUNDING SOURCE:** Maine State Planning Office

▲ PRIORITY ISSUE ADDRESSED: √ Clam Flats and Swimming Areas

Planning and Assessment Action #10

Research the Contribution of Deposition of Pollutants from the Air

- ▲ **NEED:** The question of the magnitude of deposition of pollutants from the air has become more important as other sources of pollution have been identified and significantly reduced. The U.S. Environmental Protection Agency, the Maine Department of Environmental Protection, and the Casco Bay Estuary Project have jointly worked to control point and nonpoint sources of pollution in and around Maine's waters. Water quality conditions in Maine have improved greatly in the past two decades.

A comprehensive assessment of heavy metals and organic chemicals in the sediments of Casco Bay was completed in 1991 (Kennicutt *et al.*, 1992). Pollutants of concern identified by this study include PAHs, PCBs, lead, mercury, cadmium, silver, and zinc. All of these pollutants are elevated in the sediments in inner Casco Bay near licensed waste discharges, the urban population center of Greater Portland, and sites identified in a Casco Bay Estuary Project funded study on "dirty history" (Hawes, 1993). However, the results from the eastern part of the bay raised concerns because "hot spots" of PAHs and cadmium were found in sediments of eastern Casco Bay, away from any population center, waste discharge, or known historic source. Although at much lower concentrations, a similar pattern was observed for PCBs, DDT, and chlordane, and in a subsequent study on "dioxins" (2, 3, 7, 8 — substituted PCDD/PCDF) (Wade *et al.*, 1995).

The second major scientific study undertaken by the Casco Bay Estuary Project was a circulation model of the bay (Gong *et al.*, 1995). The model did not indicate possible sources for the "hot spots" in the inner reaches of eastern Casco Bay.

- ▲ **HOW:** Monitor the wet and dry air deposition of pollutants of concern, such as cadmium and PAHs, on "well-placed islands." If it appears that pollutants of concern are being deposited from the air, then a trajectory analysis will be undertaken. Potential sources upwind of the deposition area will be identified and sampled. Dispersion from sources of pollutants of concern will be modeled. Also, estimates would be made

of the potential benefits if a source were cut back or cut off entirely.

- ▲ **WHEN:** Year 1 (or as soon as funding is secured)
- ▲ **WHERE:** Casco Bay and its watershed
- ▲ **WHO:** The Maine Department of Environmental Protection with help from the U.S. Environmental Protection Agency Office of Air Quality Planning and Standards
- ▲ **COST:** \$100,000
- ▲ **COST TO:** Not yet determined
- ▲ **POTENTIAL FUNDING SOURCE:** U.S. Environmental Protection Agency Office of Air Quality Planning and Standards
- ▲ **PRIORITY ISSUES ADDRESSED:**
 - √ Stormwater in Casco Bay
 - √ Toxic Pollution in Casco Bay