

Representatives of the following organizations participated substantially as members of the Steering Committee in the development of the background information and/or the development of this Plan. Their participation does not necessarily imply endorsement of the Plan. Please see discussion on page 1.

Coastal Conservation Association

Friends of the Presumpscot River

Greater Portland Council of Governments

Hannaford Brothers

Maine Atlantic Salmon Commission

Maine Dept. of Environmental Protection

Maine Dept. of Inland Fisheries & Wildlife

Maine Dept. of Marine Resources

USDA, Natural Resources Conservation Service

Portland Trails

Portland Water District

Presumpscot River Watch

U.S. Environmental Protection Agency

U.S. Fish & Wildlife Service

A Plan for the Future of the Presumpscot River



Reflecting the Views of
the Presumpscot River Management Plan Steering Committee

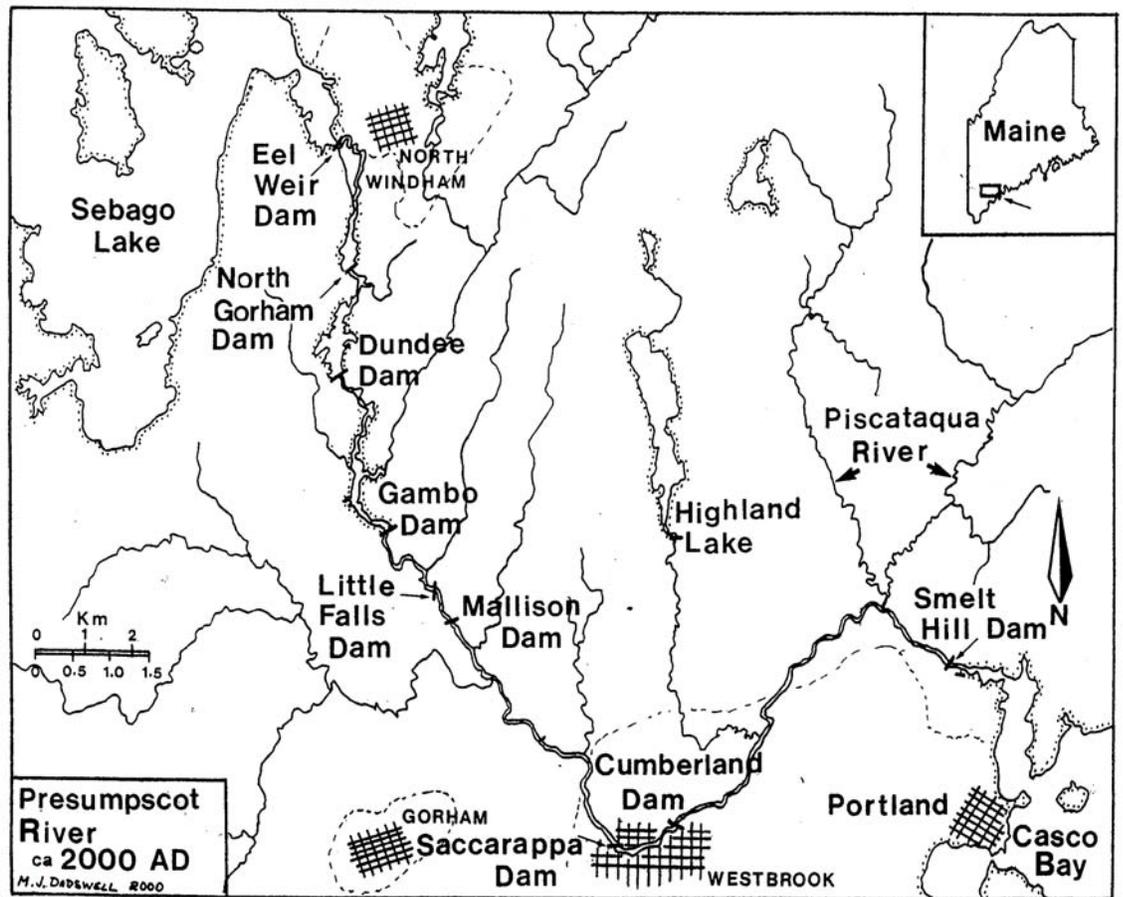
With Funding and Assistance Provided by
Casco Bay Estuary Project

And
U.S. Environmental Protection Agency, Region 1

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August 18, 2003

Presumpscot River *A Plan for the Future*



Introduction and Overview

The Presumpscot River Management Plan Steering Committee is pleased to present this draft management plan for the Presumpscot River. It reflects three years of background research on major issues of concern, development and review of options for addressing these concerns, and lastly, after input from several public meetings and a written public comment period, development of the Final Plan recommendations.

Background

In the Spring of 2000, the Casco Bay Estuary Project (CBEP) initiated a planning effort for the Presumpscot River involving a diverse group of stakeholders. The CBEP has an interest in the river since it is the largest freshwater source to Casco Bay. Interest in the river had grown in response to plans for the removal of the head-of-tide dam (Smelt Hill Dam, later removed in the Fall of 2002), and dramatic improvements in water quality resulting from the cessation of SAPPI Fine Paper's pulp mill operations in Westbrook. These two events opened new possibilities for the future of the river.

The Presumpscot River originates at Sebago Lake, Maine's second largest lake, which serves as the water supply for Greater Portland. The river, from the Eel Weir Dam at the outlet of Sebago Lake to the head-of-tide, is 27 miles long. It presently has eight dams that block the passage of migratory sea-run fish and impound most of its length from the Cumberland Mills Dam in Westbrook to the Eel Weir Dam at Sebago Lake.

The focus of the planning effort is the Presumpscot River, the adjacent river corridor lands, and to some extent its tributaries, from Eel Weir Dam to Casco Bay. The Plan does not include or address issues related to Sebago Lake levels.

Steering Committee

To develop a plan for the future of the Presumpscot River, the CBEP solicited interest in developing such a plan from a broad group of stakeholders including all five municipalities that border the river. Interested parties were then convened as a steering committee to guide the development of the plan. The Presumpscot River Management Plan Steering Committee is composed of representatives of federal, state and local government agencies, businesses, and conservation organizations and interests. In addition, one municipality actively followed the plan development process.

The goal of the Steering Committee has been to work cooperatively to develop a plan for the future of the river, and to develop recommendations that work for all interests.

SAPPI Fine Paper (formerly S. D. Warren Company), owner of seven of the dams on the river, participated on the Steering Committee for the first two years of the process; including the development of final white papers on Fisheries (May 29, 2002), Cumulative Impacts (June 11, 2002), and a draft Open Space White Paper (June 11, 2002). In addition, SAPPI participated in the public information sessions during June 2002. In November 2002, SAPPI withdrew from the planning process and was not involved in developing the draft or final Management Plan, or the final Open Space White Paper.

Purposes

The purposes of the planning effort were twofold:

1. to develop a comprehensive and unified plan with management objectives to

guide future actions and decisions that impact the river; and

2. to identify opportunities (recommended actions) for supporting continued improvements to the health of the river and its tributaries, and for capitalizing on the potential of a healthy river ecosystem for providing a diversity of public benefits, including recreational, educational and economic benefits; in balance with the benefits of renewable hydropower energy.

Focus Areas

The Steering Committee identified three issues around which to develop its vision and plan for the future of the Presumpscot River:

- Cumulative Impacts to the River
- Fisheries Conditions and Opportunities
- Open Space Conditions and Opportunities

The Steering Committee worked over a period of two years to develop an information base and proposed management objectives for each of these focus areas. White papers were drafted detailing what is known about the issues, and identifying options for addressing related problems or opportunities. These white papers are posted on the Casco Bay Estuary Project web site: www.cascobay.usm.maine.edu, or may be obtained by contacting the Casco Bay Estuary Project at 207-780-4306. They are included as Appendices to this Plan.

Developing the Final Plan

The Committee's work, including a summary of the white papers, was presented at a series of public informational meetings held in June of 2002.

Following the public information meetings, the Steering Committee worked to develop a draft Plan, including a vision for the future management of the river, its shoreland corridor, and to some extent its tributaries, with recommendations for actions that will support the achievement of that vision. This Final Plan was developed after a public hearing (May 7, 2003) and comment period.

It is hoped that this Plan will be used to guide future actions and activities affecting the river, and that it will promote stewardship and partnerships between individuals, community groups, interest groups, and all levels of governments, working together towards a vibrant future for the Presumpscot River.

The Plan includes the highlights of each of the white papers, and concludes with a Vision Statement, Recommended Management Objectives, and a Summary of Recommended Actions. Appendix A includes a more detailed presentation of the Plan Recommendations. Appendix B is a record of public comments received on the Draft Plan, with the Steering Committee's responses to those comments. Appendices C, D, and E are the three white papers providing a detailed treatment of the issues addressed by this Plan.

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How Has Use of the River, and Concern About Impacts to the River, Changed Over Time?

Original accounts and archaeological findings on the Presumpscot report it to have been a rushing river with many falls and rapids; abundant fish life, including sea-run species such as Atlantic salmon; and a Native American population (the Rockomeecook tribe of the Abenakis) living largely off the river's bounty, supplemented by corn fertilized with fish caught at the river's falls.

The Presumpscot has a rich history. The river was settled early in Maine's history (the first dam was constructed at Smelt Hill in the early 1730's). The power and water supplied by the Presumpscot were fundamentally important to the early development of the area. Without the river there would have been no mills and little development in the area. The Presumpscot was the site of Maine's first pulp mill, first hydroelectric project, only significant canal, and largest gunpowder mill.

The impact of this development on the river has been significant. No other river in Maine has virtually all its hydraulic head captured behind dams.

While use of the river for power and waste disposal were viewed as a normal part of economic development at the time, the impacts of the dams to the river's fisheries have been a concern since the 1700's. It was the site of one of the first serious disputes over water rights in Maine (fish versus

Cumulative Impacts to Environmental Conditions on the River and its Shorelands

dams). Orders from the Massachusetts Legislature in 1735 and 1741 required that any dams constructed on the river provide passage for fish. In the 1840's concerns were raised over pollution of the river with bark and sawdust; in the 1850's the paper industry was established on the river, and a number of other industries including woolen and textile mills, iron works, and a gunpowder mill added to the pollutant loading of the river. For the next 100 years, industrial uses of the river were pre-eminent over other uses.

By the 1950's the condition of the lower river was similar to most rivers in the developed northeast -- it was heavily polluted and its primary value was as a conduit for waste. The culture of environmental consciousness that grew in the 1960's, led to passage of the Clean Water Act and marked reductions in water pollutant discharges by the 1970's. While industrial and municipal treatment plant discharges to the river have been dramatically reduced since the 1960's, nonpoint sources of contamination from development and other land uses in the watershed have increased.

Interest in reclaiming the river was given a boost in 1992 when the Maine Department of Inland Fisheries & Wildlife undertook one of its most successful efforts to reestablish a trout and salmon fishery in the upper reach of the river, below Sebago Lake. More recently, the removal of the Smelt Hill Dam at head-of-tide, and cessation of the Westbrook Mill's pulp operation have combined to improve the condition of the lower river and air quality in the area. As in the past, this has given rise to a new set of competing interests, which are being addressed by this planning effort.

How Have Water Resources Been Impacted Over Time?

Altered Flow Regimes

One of the most significant changes to the natural river, dramatically altered hydrology, resulted from controlling flows from Sebago Lake, and the development of dams and impoundments on the river. This changed both the flows and character of the river, and altered water levels on Sebago Lake. This analysis addresses cumulative impacts to the river, but does not address changes to Sebago Lake.

Naturally occurring flows were undoubtedly more variable than flows that have occurred with regulation by the dam at Sebago. The figure above compares a typical hydrograph of flows in the Presumpscot River at Westbrook with a hydrograph for the Ossipee River, a comparably sized river with significant headwater lakes. This comparison indicates that the principal effect of the flow regulation at Sebago Lake has been to augment low flow periods. In addition, the hydrographs suggest that flow regulation also moderates high spring flows, and tempers the effects of summer storms (the Presumpscot River is less flashy in the summer).

In addition, current velocities have been decreased by the dams in places along the river; these dams have largely converted the river from free-flowing to a series of impoundments.

Changes in Water Quality

Because the basin was originally almost entirely forested, the original water quality naturally occurring in the Presumpscot River was in all likelihood very similar to that in Sebago Lake, its source.

The cumulative impacts of waste discharges, watershed development, and damming of the river are quantifiable. Changes in water quality include:

- Increased Total Suspended Solids
- Increased Dissolved Solids
- Lowered Dissolved Oxygen
- Increased Bacterial Levels
- Shift to Pollution-Tolerant Aquatic Organisms
- Elevated Temperature

Changes in Aquatic Habitat

In the Presumpscot, the community of aquatic life has been adversely affected by cumulative impacts in the river: sedimentation, warming, and creating impoundments. After the historic removal of the Smelt Hill Dam, over half of the river remains impounded.

How Have Estuarine Resources Been Impacted?

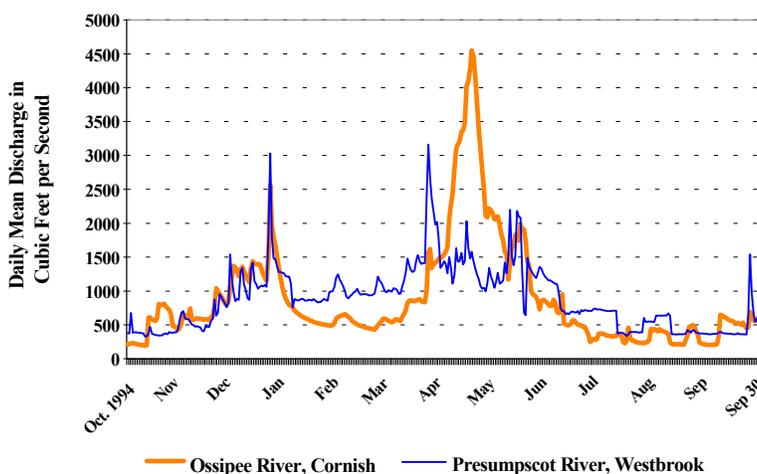
Salinity

It is unclear what estuarine species are benefited or disadvantaged by the existence of more stable fresh water flows to Presumpscot estuary, but it is clear that the system is different (more stable, less dynamic) than it would be under natural conditions.

Chemistry of Estuarine Sediments

The Presumpscot River estuary is a large depositional area where fine-grained sediments carried downstream by the river are accumulating. The fine-grained sediments of the river's estuary have moderately elevated levels of metals and high levels of PAHs (polycyclic aromatic hydrocarbons). Also the estuary has the highest levels of dioxins and furans found in Casco Bay.

A Comparison of Existing Flows on the Presumpscot River with the Ossipee River, an Uncontrolled River in the Adjacent Saco River Drainage



USGS Data, 1994

Volume of Sediments

The volume of coarse sediments reaching the estuary has been reduced by dams, while the volume of fine sediments has been increased by discharges and erosion in the watershed.

Estuarine Water Quality

The extent of eelgrass beds is often used as a positive indicator of estuarine water quality. A 1993-1995 eelgrass mapping project undertaken by the Maine Department of Marine Resources (MDMR) did not detect the presence of eelgrass in the estuary of the Presumpscot, a sign of a degraded condition.

Estuarine Animals

Pollution traveling downstream with the river has impacted estuarine organisms. In 1991, the Maine Department of Environmental Protection data indicated that dioxin, a carcinogen, was present in soft-shelled clams in the estuary in significant amounts, presenting a cancer risk of one in one million.

Eliminating the runs of sea-run fish and reducing the runs of American eels (a species that lives in fresh water and spawns in the ocean) has impacted the estuary as well as the river. Runs of approximately 34,500 to 136,000 adult American shad and 150,000 to 200,000 adult alewives, and 450,000 blueback river herring potentially could be restored to the river. If these potential runs develop, hundreds of millions of juvenile shad, alewives and bluebacks would be hatched in the river each year and tens of millions would migrate out of the river each year. The yearly migrations of these adult and juvenile fish would make the Presumpscot River estuary and Casco Bay more attractive for a wide variety of predators including, but not limited to, kingfishers, great blue herons, osprey, bald eagles, striped bass, and seals. Researchers on Delaware Bay concluded that restoring alewives and river herring to an area that is only half the habitat potentially available on the Presumpscot would produce between 539 pounds and 73,696 pounds of striped bass and weakfish in the Delaware Estuary.

How Have River Fisheries and Aquatic Life Been Impacted?

Historical documentation of the fishery noted that *"The Presumpscot is a ... rapid river ... frequented by salmon, shad and alewives, but seems to have been best adapted to salmon"* and that salmon ascended the river to Sebago Lake and beyond (United States Commission of Fish and Fisheries, 1887).

Major changes to the fish resources of the basin include:

- blocking (by dams) of fish passage for anadromous (salmon, shad, alewives, etc.) and catadromous (eels) species; DMR has estimated that if access were restored for 3 species (shad, alewives and blueback herring) that fish runs totaling approximately 634,000 to 786,000 fish could be supported by the river;
- fragmentation of habitats as a result of dams on the river;
- a shift from fast moving coldwater riverine habitats to a series of slower moving impounded areas (15 of 17.5 miles of the original river above the Cumberland Mills Dam remains impounded). This change favors fish species such as bass and panfish at the expense of native salmonids; and
- deterioration of water quality (including depressed dissolved oxygen conditions) resulting from industrial and municipal discharges.

How Have Threatened and Endangered Species Been Impacted?

Impacts to threatened and endangered plant species inhabiting the Presumpscot River corridor include loss of habitats, particularly floodplain forests as well as reduction in the productivity of these areas. Two plant species identified by the State as threatened or species of concern have been observed and two others reported historically. One of these species (small whorled pogonia) is extremely rare nationally. Agriculture, timber harvesting, inundation by impoundments, loss of anadromous fish, development and pesticide use have all contributed to cumulative impacts on certain threatened and endangered animal species (e.g., bald eagles).

How Have Recreational Resources Been Impacted?

Dams on Presumpscot have changed the character of the river from a fast moving river falling 267 feet over more than a dozen falls and rapids, to largely a series of impoundments. Until the recent removal of the Smelt Hill Dam, which restored 7 miles to riverine conditions, the Presumpscot had only 5 miles out of 27 that were not impounded, and approximately half of this was the tidal section of the river below the Smelt Hill Dam. Above Cumberland Mills Dam, only 2.5 miles of the river is free-flowing, and unimpounded sections are generally small segments, except for the Eel Weir Bypass Reach, which is 6,700 feet long (this section receives only a minor portion of the total outflow from Sebago Lake, most of which goes through a power canal). As a result, impacts to recreational resources include loss of opportunities for whitewater boating and extended river canoe trips as well as loss of coldwater fishing opportunities on the mainstem of the Presumpscot River. At the same time the dams have stabilized flows and created impoundments and opportunities for flat water recreation.

How Have the Local and Regional Economy Been Impacted?

The subsistence economy of the Native Americans who first inhabited the Presumpscot River area was based largely on the food resources provided by the river. This economy was in place for thousands of years before Europeans settled the area. In the 1700's, the European colonial economy was based on a mixture of agriculture and related industrial development.

It would be difficult to overstate the importance of the river to the region's early industrial economy. The power and water provided by the Presumpscot River, particularly the reliable flows which resulted from damming and managing the water level on Sebago Lake, were the reasons for the growth of industry and population centers on its banks.

The river and its management continue to impact the region's prosperity. Today, dams on the river produce low-cost electricity for the SAPPI mill in Westbrook, which provides jobs for over 500 people (energy savings are estimated at approximately \$2 million per year), and contributes approximately \$85 million per year to the local economy. However, the future of the SAPPI Westbrook mill depends on many factors beyond the energy production at these dams.

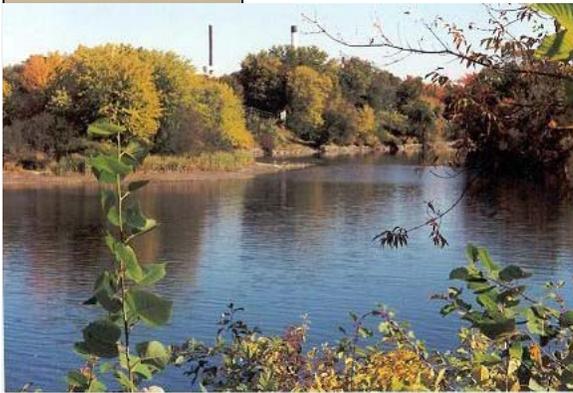
In addition, regulation of river flows through controls at Eel Weir Dam at the outlet of Sebago Lake (not proposed for removal by any option under consideration) has provided higher more constant summer flows, reducing wastewater treatment costs for downstream municipal and industrial dischargers.

The waterpower of the river has fueled the area's industrial economy, but there has also been an economic price to pay. This includes the external costs of industrial development borne by the public -- the cost of government programs to reduce pollution, public health costs, etc. -- resulting from industrial discharges. Another cost is reduced water quality, with reduced opportunities for trout and salmon fishing, loss of recreation opportunities, and aesthetic impacts. These costs are somewhat offset by enhanced opportunities for flat water recreation and bass fishing.

All of these costs have economic impacts, as well as impacts on the quality of life enjoyed by residents and visitors. For example, a statewide study found that inland fishing supports over 5,000 jobs and has a total economic output of \$292 million. Of course, only a small portion of this total results from fishing on the Presumpscot; however, it is likely that the loss of trout and salmon populations has resulted in a loss to the regional economy.

In comparison, in the year 2001 the pulp and paper industry employed 13,200 people in Maine and comprised about 4.5% (\$1.45 billion) of Maine's Gross State Product (information from the Maine Pulp and Paper Association), of which only a small portion is attributable to the economy of the Presumpscot Basin.

Thus, the development of the Presumpscot River and its corridor has resulted in important benefits as well as losses to the local and regional economy and environment. While society has benefited from the use of its waters for industry, for power, and for the dilution of wastes, the cumulative impacts of human use have eliminated most of the natural values of the "*river of many rough places.*" The challenge faced by this planning effort is to find solutions to problems which reduce cumulative impacts, improve the quality of life for residents and visitors, increase economic activity based on improvements in environmental quality, and support both new and traditional industries.



Fisheries Conditions, Issues and Opportunities

Why are Fisheries a Concern for the Presumpscot River?

Fisheries management is one of the central issues in planning for the Presumpscot River. For the first time in over a century, the future of the Presumpscot River includes new possibilities for fish restoration. Water pollution on the river has been greatly abated with the development of water treatment facilities and SAPPI's elimination of its pulp mill. Further, with the removal of the head-of-tide dam at Presumpscot Falls (the Smelt Hill Dam) in the Fall of 2002, 7 miles of the lower Presumpscot River has been restored to its original free-flowing condition. State and federal resource agencies, and river constituencies now see new potential for both existing resident and potential migratory fishes of the Presumpscot River.

What Fisheries Currently Exist in the Presumpscot River?

The existing fishery of the Presumpscot River includes:

- 1) An intensively managed stocked trout and salmon fishery located primarily in the Eel Weir Bypass, and secondarily in several other tailraces below the downstream dams and selected tributaries. The Eel Weir bypass (approximately 1.25 miles in length), the original river channel located immediately below Sebago Lake, is stocked annually by the Maine Department of Inland Fisheries and Wildlife with up to 2,500 brook trout.

- 2) Resident species, primarily bass, perch, and bullhead, found in the series of impoundments that characterize nearly 15 miles of the river below the Eel Weir Bypass (from the upper end of the North Gorham impoundment to the Cumberland Mills Dam); and
- 3) Migratory species, principally eels, found in all the impoundments, and alewives, found seasonally in the river below the Cumberland Mills Dam.

What Affects Fisheries Habitat in the River?

Development with Dams

Much of the river is impounded by low head dams. Presently, there are eight dams on the river, from its source at Sebago Lake to its outlet at Casco Bay. These include: Eel Weir Dam at the outlet of Sebago Lake, North Gorham Dam, Dundee Dam, Gambo Dam, Little Falls Dam, Mallison Falls Dam, Saccarappa Dam, and Cumberland Mills Dam. The dams have created a series of impoundments that have replaced the natural pools, riffles, runs, and falls originally present in the river. Until the removal of the Smelt Hill Dam in 2002, impoundments occupied approximately 22 of the 27 miles from head-of-tide to the present day outlet of Sebago Lake. Today, 15 of 27 miles remains impounded.

Ecology of an Impounded River

Dams have altered the ecology of the river. Narrow riverine impoundments are too slow moving to function like a natural river, and too fast moving to function as a lake or pond. As a result, planktonic communities, which are the typical food base of lakes, are unable

to develop, and the abundance and diversity of the benthic (bottom dwelling) organisms are diminished compared to a river, lake or pond. Hence, the river is not well suited either to riverine fishes (those that prefer cold, fast-flowing well oxygenated shallow waters, including trout and salmon), or lake dwelling fish (including bass, perch, pickerel, and bullheads). A 1997 baseline fisheries study concluded the bass and panfish habitat was marginal in the five impoundments studied: Dundee Dam, Gambo Dam, Little Falls Dam, Mallison Falls Dam, Saccarappa Dam.

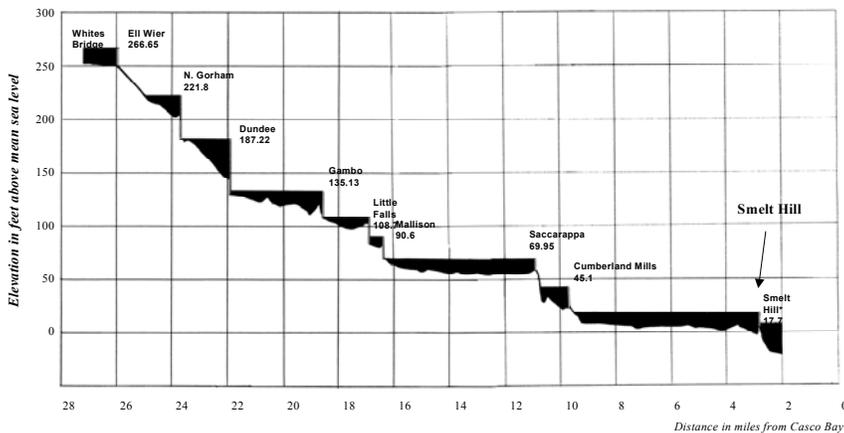
The result is relatively low numbers of fish in the river, composed primarily of species adapted to the impounded environments, i.e., smallmouth bass, pumpkinseed, and yellow perch; and a small seasonal population of stocked brook trout, landlocked salmon, and brown trout principally in the tailrace areas below the dams where conditions are more riverine.

Impediments to Fish Migrations

Dams on the Presumpscot River impede the movement of both resident and sea-run fishes.

- Dams block or impede sea-run fish from returning to fresh water (alewives, shad and salmon return to spawn, while immature eels migrate to fresh water to mature).
- Dams have isolated sections of the river, reducing the ability of resident and migratory fishes to reach spawning areas in the river and its tributaries, and coldwater refuges during hot weather.

PROFILE OF PRESUMPCOT RIVER*



* Before removal of Smelt Hill
 Sources: Federal Emergency Management Agency: Flood Insurance Study: Portland (1998), Falmouth (1984)
 Westbrook (1980), Gorham (1981), Windham (1981), and Portland Water District (survey of riverbed elevation at White's Bridge).
 Prepared by: Natalia Kassatova, Graduate Intern, Casco Bay Estuary Project

Water Temperatures

Like many other small coastal rivers in southern Maine, during the summer the Presumpscot River water temperatures are limiting for native trout and salmon species outside of any coldwater refuges that may exist near springs. This is true of both the impounded and unimpounded reaches, including the Eel Weir Bypass. In the summer, native brook trout move to colder water near springs or in the tributaries where waters are naturally cooler due to shade and a higher groundwater component to the flows (base flows).

For this reason, restoring trout and salmon to the Presumpscot River may also require efforts to enhance tributary habitats through re-establishment of wooded riparian buffers and reduction of sedimentation and pollution discharges. Other species that can tolerate the higher summer temperatures in the river include the introduced brown trout, sunfish, bullheads, and bass.

What Do Historical Accounts Tell Us About the Past Fisheries on the Presumpscot River?

Early historical accounts attest to the abundance and importance of fisheries in the Presumpscot River. They also document a long history of controversies related to blockage of fish migrations by dams on the river. The first dam was constructed at the head-of-tide, Presumpscot Falls, in the 1730's. Others soon followed. The dams caused public protests and prompted Chief Polin of the Rockomecook Tribe to walk to Boston to confer with Governor Shirley about restoring fish to the river. Failing to gain an adequate response, Chief Polin made a second trip to Boston and threatened to force the settlers out if the fish were not returned to the river. The first armed conflict between the Indians and the settlers along the Presumpscot River ensued, which was ended when Chief Polin was killed by the settlers in 1756.

On October 30, 1781 the selectmen of the towns of Gorham, and agents from the towns of Windham, Standish and Bridgton (which includes the Crooked River flowing into Sebago Lake), petitioned the Governor and

Legislature of the Commonwealth of Massachusetts to “*appoint a Committee that shall cause good and sufficient fish courses to be made through the several dams on the river*” to restore the fisheries to the river. They stated that the Presumpscot River “*in times past has been remarkable for being frequented by Shad, Bass, (and) Salmon. . .*” They argued that restoring these fish runs was necessary to support the early settlers of the Plantations adjoining the stream and would also benefit cod fishermen, “*For it is well known that the small fish running in shore for fresh water streams draw the Cod after them.*” This petition cites repeated previous petitions on this continuing problem (records of the Maine State Archives).

Charles Atkins, in his report “The River Fisheries of Maine” included in a report from the U.S. Commission of Fish and Fisheries to the 47th Congress in 1887, says of the Presumpscot River, “*It was frequented by salmon, shad, and alewives, but seems to have been best adapted to salmon. All fisheries were practically extinguished early in the present century (the 19th century) by a dam at the head of the tide.*”

What Are the State Fisheries Agencies’ Goals and Objectives for the Presumpscot River?

In a jointly written Draft Fishery Management Plan for the Presumpscot River Drainage (December 2001), the Maine Department of Marine Resources, Maine Department of Inland Fisheries & Wildlife, and the Maine Atlantic Salmon Commission, call for restoring sea-run fish to the river, including alewife, blueback herring, American shad, striped bass, Atlantic salmon, and possibly Atlantic sturgeon, rainbow smelt, sea-run brook, brown trout, and tomcod. The Plan also states objectives to improve the runs of American eels; stock trout to provide angling opportunities in areas which provide suitable habitat; and provide angling opportunities for other resident sportfish, including smallmouth bass, largemouth bass, chain pickerel, yellow perch, white perch, brown bullheads and black crappie.

What Can be Done to Improve Fisheries in the Presumpscot River?

With the recent removal of the Smelt Hill Dam, migratory fish have unimpeded access to the lower 7 miles of the Presumpscot River and its tributaries for the first time in over a century. However, migratory fish are still blocked from upriver spawning and nursery habitat (as far as the dam at Sebago Lake) by seven dams.

The goal of the Steering Committee preparing the Plan for the Presumpscot River has been to develop recommendations that work for all interests. The problem, and at the same time the opportunity, is finding a solution that allows the restoration of migratory fish to the river, while minimizing adverse effects to the SAPPI mill. Fish passage is costly (capital costs of several millions of dollars per dam), and removal of the dams, while generally less costly (on the order of one million dollars per dam), will reduce SAPPI’s electrical generation capabilities. According to SAPPI, hydropower is the Westbrook Mill’s lowest cost power source.

“...in times past has been remarkable for being frequented by Shad, Bass, (and) Salmon...”

Review of Options

There are several possible courses of action to enhance or restore fish resources in the Presumpscot River. Options considered in developing this Plan ranged from simply enhancing the resident (bass and trout) fisheries; to restoring migratory fish runs as far as the dam at Sebago Lake through fish passage facilities and dam removals.

Option 1: Enhance the Resident Fish

Measures can be taken to enhance the numbers of or habitat for resident fish. Species of interest for fisheries enhancement include primarily trout, and bass and other pan fishes. Trout can be increased to support additional fishing through increased stocking in suitable areas, including the tailrace areas below Dundee Dam, Gambo Dam and Mallison Falls Dam. However, the degree of enhancement possible through stocking is limited by the small amount of habitat presently suitable for trout due to the changes in the river caused by dams.

Activities to enhance the bass and pan fisheries, on the other hand, are limited to enhancing the habitat, as in Maine there is no program to enhance bass fisheries by put and take stocking – and hatchery-raised fish are not even available in Maine. Habitat enhancement activities appropriate for the Presumpscot could include enhancing the cover provided for these species in impoundments by creating artificial reefs, and adding submerged woody debris or large rocky rubble to littoral areas on river bottom areas.

Option 2: Restore Migratory Fish Runs

One option initially considered for restoring migratory fish to the river, was the removal of the Smelt Hill Dam at the head-of-tide. This option became moot when the dam was removed in September 2002. The removal of the Smelt Hill Dam is expected to result in restored migratory fish runs in the lower river, as far as the Cumberland Mills Dam, and will allow alewives to migrate up the river and Mill Brook to Highland Lake, a historical spawning habitat for these fish. A small run to this spawning habitat has been maintained over the years through a variety of measures, including trap and truck operations.

Estimated Runs of Migratory Fish in the Lower River Following Removal of the Smelt Hill Dam ¹	
American shad	6,000 – 24,000
River herring	78,000
Alewives	150,000 – 200,000
Atlantic salmon	25 - 100
¹ Other migratory fish that are expected to utilize the river include American eels, striped bass, and possibly sea-run brook and brown trout, Atlantic sturgeon, rainbow smelt, and tomcod.	

The challenge and opportunity remaining is restoring the Presumpscot River to its full potential for resident and migrating (sea-run) fisheries. The key issue for migratory fish runs is how the obstructions to passage at the remaining dams on the river, including the Cumberland Mills Dam, are to be overcome. The Cumberland Mills Dam is not covered by the Federal Power Act, and hence fish passage cannot be federally mandated at this dam as it can be for the other dams on the river. The Cumberland Mills Dam is, however, covered by a State Statute (12 MRSA§ 7701-A) that authorizes the Commissioner of the Maine Department of

Inland Fisheries and Wildlife to require fishways to be erected by the owners of any dam within inland waters to restore anadromous (sea-run) fish resources.

Opportunities for further restoration of sea-run fish therefore hinge on the future of the Cumberland Mills Dam. The issue of fish passage at Cumberland Mills Dam could be resolved, through State action, or a cooperative agreement involving SAPPI and the various interests that desire the restoration of migratory fish runs above Cumberland Mills Dam.

Alternatives for Further Restoration

There are two basic methods for providing access to the upper reaches of the river: fish passage facilities; or dam removal. Because of the inefficiencies and avoidable mortality of some fish with fish passage facilities, the maximum number of fish passages that will achieve sustainable runs of fish is generally considered to be no more than three. Alternatives considered for this Plan, and the resulting estimated fish runs restored and effects to resident fish are described in the table below and the following text.

Estimated Runs of Migratory Fish ¹	Option 2A. Fish passage at one to three dams (Cumberland, Saccarappa and Mallison Falls)	Option 2B. Removing 3 dams, up and downstream, fish passage at 1-3 others, downstream passage at N. Gorham
American shad	7,000 – 56,000	16,000 – 136,000
River herring	97,000 – 187,000	206,000 – 450,000
Alewives	150,000 – 200,000	150,000 – 200,000
Atlantic salmon	25 - 450	100 – 1,000
Resident Fish		
Trout/salmon	No change	More habitat
Bass/panfish	No change	Less habitat
Capital Costs	+\$1 – 8 million	+ \$4 – 13 million
¹ Other migratory fish that are expected to utilize the river after the Smelt Hill Dam is removed include American eels, striped bass, and possibly sea-run brook and brown trout, Atlantic sturgeon, rainbow smelt, and tomcod.		

Option 2A. Fish passage at one to three dams (Cumberland, Saccarappa and Mallison Falls). Passage at Cumberland Mills would open one mile of river to sea-run fish; passage at three dams would open an additional seven miles and would provide access to the Little River. Eel passage would also be provided at all dams up to and including Dundee Dam.

Option 2B. Removing three dams, providing up and down stream fish passage at one to three others, and providing downstream fish passage at North Gorham. Saccarappa, Mallison and Little Falls Dams would be removed, and passage would be provided at Cumberland Mills, and possibly Gambo, and Dundee Dams. Under this option, sea-run fish would gain access to 9 to 14 miles more of the Presumpscot River and the Little River and Pleasant River. Nearly eight miles of free flowing river would be restored, enhancing habitat for native trout and salmon. **This option was selected by the Steering Committee as the Preferred Option.**

Passage, not removal, is proposed for the Cumberland Mills Dam in this option for two reasons: (1) this dam is subject only to the authority of the Maine Department of Inland Fisheries and Wildlife to order fish passage facilities; options for a regulatory solution are thus limited to provision of passage, not removal, at this dam; and (2) dam removal would require agreement by SAPPI; however, the Cumberland Mills pond is used by SAPPI for process water and fire control; this Plan did not include a detailed study of how this could be accomplished together with a full or partial dam removal, as SAPPI expressed no interest in such a solution.

A concern raised about this option was how dam removal would affect the flood storage capacity of the river, and the extent of areas in the river floodplain. Currently, the US Geological Survey is redefining the flood hazard areas for the Federal Emergency Management Agency for the Saccarappa impoundment and downstream communities. However, based on a study conducted for the Federal Energy Regulatory Commission on the effects of removal of the Little Falls, Mallison Falls, and Saccarappa dams (conducted in 2001 using existing flood maps), there appears to be a benefit from the removal of the dams, as the river elevation would drop, as would the flood elevations. The Saccarappa impoundment and the elevation of the 100-year flood are both projected to drop by 10 feet. According to the report, removal of the dams “would allow the river to generally stay within the channel under the 100-year flooding scenario, resulting in a

decrease in floodway width in the lower Saccarappa reach by 500 feet on the eastern shore and 100 feet on the western shore.”

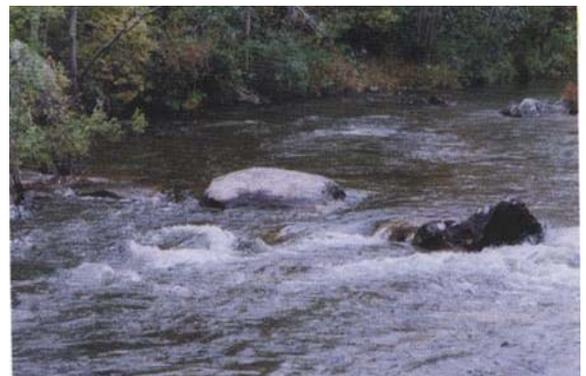
Benefits of Option 2B include:

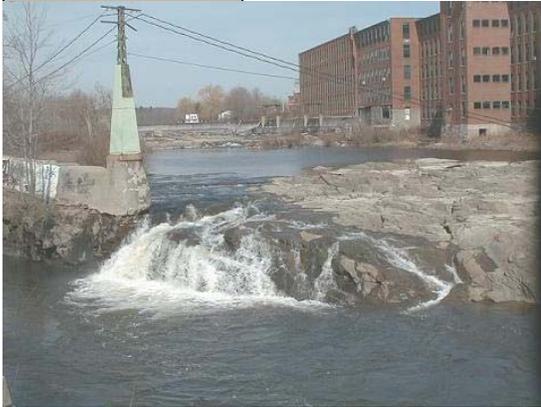
- Restores eight miles of natural riverine habitat including falls, rapids, riffles, pools, cobble bottom, and the sights, sounds and smells of a flowing river.
- Allows passage for 100% of migratory fish compared to smaller percentages enabled by fish passage devices whose results vary by species and type of device.
- Ends the continuous, unnatural erosion of property along impoundments, which is caused by the flooding of land by the dams.
- Restores previous flooded property to property owners and town tax rolls.
- Eliminates sedimentation caused by the dams and reduces creation of additional suspended particulates brought into the river by ongoing erosion caused by high water behind dams.
- Improves dissolved oxygen levels in the three formerly impounded reaches (these three impoundments are currently "non-attainment" areas – areas not meeting water quality standards due to depressed oxygen levels.
- Reduces the impact of flood events and reduces the size of flood zones above existing dams which are removed, resulting in less property damage and lower insurance rates for property owners. Restores natural bed load movement.

Challenges for Option 2B:

- Cumberland Mills Dam, with fish passage, serves as a limiting factor for allowing sea-run fish access to the free-flowing reach. (Perhaps the answer here is to invest in the best fish passage devices to deliver the most to waters above, including investigation of alteration to the dam to allow a "natural" passage – that is, an altered river bed as opposed to a fish lift or fish ladder.)

How this option will be implemented is harder to envision than why it should be done.





Protecting and Enhancing Open Space Along the Presumpscot River

Why is There Concern for Protecting Open Space Along the Presumpscot River?

The Presumpscot River is located only minutes from Maine's largest urban area, Portland, and is undergoing significant changes that augur well for recovery from what was once a highly polluted river nearly unsuitable for fish, to a river with restored water quality and fisheries. The cleanup of the river and removal of the dam at the head-of-tide have started the process of ecological recovery, and communities along the river are now seeing new potential in the river.

The good news is that a surprising amount of the Presumpscot shoreline (83.9%) remains undeveloped. However, while the pace of development since the 1950's has been very modest, the pressures for development along the Presumpscot are stronger now than they have been in the past as a result of new interest in the river, and the lack of permanent protections for open space along the river. Having an undeveloped river corridor along a river that offers significant public benefits and amenities, located so close to Portland, is an opportunity that should be seized before it is too late.

What Are the Public Values of Open Space Along the Presumpscot River?

Open space along the Presumpscot River:

- is important for fish and wildlife habitat;
- provides a unique habitat for many plants not found elsewhere;
- offers space needed to accommodate and absorb floodwaters;
- is a buffer that helps maintain the water quality of the river;
- provides viable opportunities for agriculture in the areas that are "prime" soils for crops; and
- provides opportunities for outdoor recreation, and appreciation of our history.

Wildlife and Fish Habitat Values

Well-vegetated open space corridors along river or streams (riparian lands) have special value as wildlife habitat for several reasons:

A unique edge habitat: These lands form the edge between two important habitat types (terrestrial and aquatic) which are used by animals that depend on both habitats for food, shelter, or reproduction.

Importance to aquatic habitats: These riparian lands help maintain the habitat values of the river and estuary through filtration of pollutants and sediment in runoff; transport nutrients and other materials needed to sustain aquatic life; provide shade which controls fluctuations in temperatures in the river; and stabilize streambanks against the erosive force of high flows.

Importance to birds: Riparian lands are home to unique riverine shrub-scrub wetlands, which are an important habitat for many bird species and other animals.

Deer yards: Low-lying riparian lands are often the most fertile and well-watered lands in landscape, and support important habitats such as deer yards.

Wildlife travel corridors: Riparian lands are often the most continuous wildlife travel corridors available within a region, linking otherwise disjunct upland habitats and compensating, to some degree, for the loss of large continuous habitat blocks in a developing landscape.

Overall importance to wildlife and plants: ***80% of Maine's terrestrial vertebrate wildlife species use riparian areas to meet their habitat needs at some point in their life cycle.*** Further, a Maine Audubon report states that "Over half of all owl, salamander, frog and toad species that breed in Maine are listed as of special concern, threatened or endangered in other northeastern states" (species that depend heavily on riparian areas). Thus, Maine has a chance to protect important habitat types other areas have already lost.

The combination of these values has led a coalition of planning and conservation organizations to conclude that protecting riparian habitat should be the "backbone" of local and regional planning efforts, as "conservation of wetlands and surrounding riparian habitat is essential to ensuring that the full compliment of Maine's plants and animals persist on the landscape" (Maine Audubon Society, Maine Department of Conservation, Maine Department of Inland Fisheries and Wildlife, Maine State Planning Office, U.S. Fish & Wildlife Service, Wells National Estuarine Research Reserve, Maine Coastal Program, U.S. Geological Survey, Southern Maine Regional Planning Commission, and The Nature Conservancy).

Plant Habitat Values

Riparian open space areas have special values for plants and plant communities.

Rich alluvial/ floodplain soil habitats: Community types such as silver maple forest require riparian sites with high water tables and relatively rich soils for successful development. Species such as black willow occur commonly only in riparian locations. Other common plant species that require rich alluvial (floodplain) settings, e.g., species such as the ostrich fern or fiddleheads, are largely limited to floodplain sites.

Importance to Rare Plant Species: Many plants that thrive in the rich alluvial flats in riverine riparian zones are rare now, in part because many of these areas nationwide have been converted to agricultural use or developed for other purposes. Two plant species identified by the State as threatened or endangered have been observed in areas along the Presumpscot above Dundee Dam: *Isotria medeoloides* (small whorled pogonia) and *Lindera benzoin* (spicebush). Spicebush, so named because of the spicy aroma it gives off, is often found in moist, shady sites along floodplain forests. The small whorled pogonia has been labeled the rarest orchid east of the Mississippi River and north of Florida.

Riverine Wetland Habitats: Certain types of shrub-scrub wetlands are specific to riverine areas, and occur along the aquatic edge of the riparian zone or on islands within the river. They include a variety of plant species, including shrubs such as willows, as well as grasses and sedges, and provide special values for a variety of wildlife species.

Flood Protection

Maintaining open space is important for floodwater storage and mitigating flood damage in downstream areas. Open space along rivers provides an area for floodwaters to spread out, reduce their velocity, and recharge groundwater stores. Having such storage available can reduce downstream flood flows and velocities thereby preventing increased flood damage downstream.

Historical and Archaeological Resources

Rivers provide food, water, transportation, and power, and naturally attract human habitation and development. As a result, river corridors are often enriched with traces of the past, and the Presumpscot is no exception. Along the river corridor, there is a patchwork of relics from early prehistory to the recent past. Preserving and celebrating historic resources can provide important opportunities for education, add interest to the physical landscape, and help to define an area's sense of place.

The Presumpscot has a particularly rich prehistory and history as it was used heavily by Native Americans, developed as a water transportation corridor with creation of the Cumberland and Oxford Canal, and was the site of many early industrial countries, *e.g.*, the Oriental Powder Mill which supplied much of the gunpowder for the Union Army during the Civil War.



Farming and Open Space

Agriculture has been an important contributor to open space along the Presumpscot River. Native Americans were reported to grow corn in the area around Saccarappa Falls where they could "fish" the corn (using fish as fertilizer). The rich alluvial soils that support a diverse plant community are also prime farmland soils. Once the dominant use of the landscape starting in Colonial times, agriculture or maintained fields now comprise less than 10% of the lands in the Presumpscot River corridor. The Presumpscot was an important area for agricultural experimentation and the development of modern agriculture methods during the Colonial and Early American period.

Recreation

Open space along the Presumpscot River is important for the following activities:

- Boating, canoeing
- Swimming
- Fishing and hunting
- Snowshoeing
- Wildlife observation
- Cross-Country Skiing
- Historical study
- Education
- Snowmobiling
- Bicycling
- Walking
- Kayaking

The open space recreation activities afforded by the Presumpscot River are important because of the undeveloped nature of the river corridor, the diversity of opportunities available, and its proximity to Portland. The river fishing opportunities on the Eel Weir Bypass section of the Presumpscot River, which provides year-round opportunities for trout fishing, are particularly noteworthy.

What is the Current Status of Open Space Along the Presumpscot River?

An Undeveloped Corridor

Today, 84% of the area immediately along the Presumpscot River (within 250 feet) is undeveloped; only 16% is developed. Above Westbrook, about 14% of the land adjacent to the river is developed, and below Westbrook to the site of the former Smelt Hill Dam, about 21% of the river corridor is developed. The table below shows the percentage of river frontage that was undeveloped in the 1950's and 1970's, by town.

City/ Town	Total Frontage (miles)	Percent Undeveloped 1950's	Percent Undeveloped 2000
Gorham	14.4	91.8	88.8
Windham	13.6	93.9	85.2
Westbrook	9.75	75.0	62.5
Portland	3.80	100	96.5
Falmouth	5.30	97.8	97.5
TOTAL	46.85	90.1	83.9

How Does Current Development Pressure Compare to Past Pressures?

Past Trends in Development Along the River

The pace of development since 1950 has been modest. Prior to 1950 about 4.6 miles of the river frontage was developed. Since the mid 1950's, another roughly 3 miles has been developed, with half of that development above Westbrook and half below. Only about a half-mile of this 3 miles of development occurred after the mid 1970's.

This relatively slow development pace along the river can be linked largely to the past uses of the river. Industrial development made many areas immediately adjacent to the river less attractive for residential and recreational development than they would have been if the water were cleaner. In addition, in the past, strong odors from the Westbrook pulp plant impacted the desirability of shoreland property as a place to live. With the elimination of the pulping process at the SAPPI mill, both water and air quality have been improved. These changes are expected to increase development pressure along the river.

New Development Pressure Prompts a Major Protection Effort in Portland

As evidence of the current desirability of Presumpscot River frontage, in the Fall of 2001, the City of Portland narrowly prevented development of one of Portland's largest tracts of remaining open space along the river. A developer proposed building a 67-home, riverfront subdivision in North Deering, the City's fastest growing neighborhood. The Portland Landbank Commission, Portland Trails, and the Land for Maine's Future Program worked collaboratively to negotiate a deal to make the purchase of the riverfront affordable for the City. As a result of the agreement, the City now owns 48 acres of land along the river's edge to a depth of 500 feet and the developer was able to construct 30 new homes.

The acquisition of these properties, known as the **Presumpscot River Preserve**, combined with the property of the Falmouth Conservation Trust and the acquisition of several other private parcels by Portland Trails, has since resulted in the protection of more than 80% of the riverfront between the Maine Turnpike and the Allen Avenue Bridge.

What Public Recreation Lands and Access Areas Exist Along the Presumpscot River?

Public Recreation Lands

The table below shows current public recreation lands and water access points along the Presumpscot River.

City/Town	# Water Access Sites	Public Recreation Lands Acres/Sites	% of Acres in 250-ft Corridor in Public Recreation Lands
Gorham	6	60/ 6	1.1%
Windham	3	132/ 4	4.7%
Westbrook	0	90/ 8	3.0%
Portland	1	333/ 4	5.2%
Falmouth	1	60/ 7	1.4%
TOTAL	11	675/ 29	15.5%

Public Water Access Points

Access for carry-in boat access, swimming or fishing include:

1. Route 35 Bridge in Windham over the old river bed - access for fly fishing.
2. North Gorham Park in Gorham - a public swimming and carry-in boat launch on North Gorham Road for access to North Gorham Pond.
3. Windham Center Road carry-in boat launch - access to the river and Dundee Pond.
4. Dundee Park in Windham on Dundee pond - swimming, picnicking and carry-in launching.
5. Dundee Dam canoe portage in Gorham - an access gate on the road to the powerhouse and dam, limits use of this access other than for canoe portage.
6. Oriental Powder Mill/Cumberland Oxford Canal historic sites in Gorham - trails and informal canoe portage around Gambo Dam. Access via an abandoned road off Route 237.

7. Hawkes/Tow Path Property in Gorham - access off Tow Path Road in Little Falls village. Access to the river with carry-in boat launching and trails.
8. Mallison Falls canoe portage and fishing access site in Gorham and Windham - two canoe portage trails at Mallison Falls Dam, one on each side of the river. On the west side near the powerhouse, the put-in site is also used for fishing access.
9. Little River Carry-in Boat Access in Gorham - located off Rt. 237; provides access to the Little River and the Presumpscot near their confluence. Trails and a carry-in boat launch.
10. Riverton Trolley Park - owned by the City of Portland. Trails and access to the river through an informal carry-in boat launch.
11. Town of Falmouth - there is a small park after the Allen Avenue Extension Bridge across the river in Falmouth. Parking is available, but no easy access to the river due to steep banks.

Additional water access, not listed above, is being developed at the Presumpscot Falls properties recently acquired by Portland Trails and the Town of Falmouth.

Trails Along the Presumpscot River

Trails presently include the towpath of the Cumberland and Oxford Canal in Gorham, and the urban riverfront walk in Westbrook. Westbrook plans to extend its trail system, and Portland and Falmouth are developing a trail system with their recent acquisitions along the Presumpscot River.

The State of Maine owns a portion of the 50-mile Mountain Division Rail Line from Route 202 in Windham to the Maine/New Hampshire border in Fryeburg and has plans to convert this corridor into a “rail-with-trail” project. The State eventually hopes to purchase the remainder of the rail line from South Windham to Portland to create a continuous multi-use path from Portland to the White Mountains. The entire length of the rail line from Gambo Road to Westbrook runs directly adjacent to Presumpscot River (on the east side) and would provide a great recreational opportunity along the river.



What Protections Exist for Open Space Along the Presumpscot River?

Regulation and Zoning

Zoning ordinances are tools used to regulate both land use as well as the characteristics of the permitted uses. Town-wide zoning, Shoreland Zoning, and Floodplain Management Zoning are the three most prevalent types of zoning in the State.

Shoreland Zoning: The shoreland zone along the Presumpscot River consists of areas within 250 feet of the normal high-water line of the river. Development is prohibited in areas zoned as resource protection districts; however, these districts often include less than 100 feet of the 250-foot shoreland zone, and development can occur beyond the 100 feet.

Open space/recreation districts: The City of Portland zones public recreation lands to exclude future development not related to recreation and open space. This district is established along the Presumpscot River from Route 302 (the bridge at Riverton) to the city line at the I-95 bridge, and includes two city-owned parks, the Riverton Trolley Park and the municipal golf course. These two parcels include about 1.8 miles of river frontage.

Floodplain Zoning: Federal law requires that local governments establish flood plain protection ordinances in order for the residents of those communities to qualify for federal flood insurance. Flood plain protection ordinances provide that first floor elevations must be above the 100-year frequency flood and that flood flows not be restricted by development in velocity areas. This affords some protection, but development is only prohibited in the “velocity” zone.

Protection by Ownership or Easements

A number of areas along the Presumpscot River are protected to some degree as open space through public ownership or conservation easements. The degree of protection varies, depending on the nature of the ownership and presence of any legal restrictions.

Limited Protection Lands: These lands include areas in public or quasi-public ownership that do not have easements or deed restrictions that protect the land from future development. Lands that are in public ownership may or may not stay as open space in the future, unless there is a conservation easement protecting the property from future development. Even public lands that are currently dedicated to open space or recreation and zoned for open space are vulnerable to future changes in municipal objectives; for example, a golf course could be converted, in the future, to a riverside office park or residential development to meet municipal economic development objectives if the political and economic conditions support such a change.

Permanent Protection Lands: Only lands that have legal restrictions for future development applied through permanent conservation easements, or ownership by a land trust or land conservation organization, are considered to be truly protected open space, shown as Permanent Protection in the table below.

City/Town	% of Acres in 250-ft Corridor in	
	Permanent Protection	Limited Protection
Falmouth	0.7	2.4
Portland	1.1	4.1
Westbrook	0.0	3.5
Windham	0.0	6.4
Gorham	1.0	<0.1
Standish	0.0	0.0
Total Corridor	2.8	16.4

What Lands Should Be Protected as Open Space Along the Presumpscot?

Defining Priorities for Protection

Deciding which of the many potential areas that are in need of protection should be a priority for protection necessarily depends on the objectives of the protection effort. There are many values worthy of consideration in open space protection, including fish and wildlife values, scenic and recreational values, ecological and scientific values including protection of rare plants and plant communities, the value of prime agricultural soils, and historic or archaeological values. ***This Plan identified priority areas for open space protection based on high value natural resources*** using available natural resources information. Because of the limitations of the available information (much compiled from air photos, not fieldwork), a more detailed analysis and systematic ranking of each of these and other values based on additional surveys and field data would be useful to sharpen the focus and to identify priorities for protection of high value natural resources.

This Plan does not address priorities for acquisition or management of public lands for recreation. The Steering Committee chose not to address recreation priorities in part because the FERC licensing of the SAPPI hydropower projects would include requirements for public recreation at the projects; and because the scope of effort needed to assess recreation facility needs and resource suitability for recreational use was beyond the resources available for this Plan.

Any future acquisitions of lands along the Presumpscot River should integrate the results of this high value natural resources analysis, and any further refinement thereto, with an analysis of recreational needs and opportunities, and areas suitable for recreational use. The Steering Committee received a number of comments expressing concern that recreational use of protected lands and the river be kept in balance with, and not damage, its outstanding natural resource values. This Plan should be viewed as a starting point towards that goal.

Priorities for Protecting High Value Natural Resources

While a comprehensive and detailed analysis was beyond the scope of this study, it was possible to identify, with available information, areas that should be considered a priority for protection due to high value natural resources and lack of current protections. Using natural resources information from state and federal resource agencies, and land use protection information gathered as part of this project, a preliminary analysis was conducted by the U.S. Environmental Protection Agency, Region 1, utilizing their Geographical Information System (GIS) capabilities. The results, which show high value resource areas that have no current protection, are shown on the attached map (Map 7 from the Open Space White Paper).

Examining the areas identified through this analysis, a number of general areas can be identified as having a cluster of priority high value natural resources. These include:

1. The backland behind the Resource Protection District along the shoreline of Dundee Pond on the east (Windham) side, from south of Dundee Park to roughly 500 feet north of Dundee Dam.
2. The Windham side of Dundee Falls below the Dundee Dam (about a one-half mile stretch of the river with rapids and a series of islands).
3. An area below the Mallison Falls Power Station access point in Gorham, roughly 500 feet in length, extending back beyond the 250-foot corridor area.
4. The area at the confluence of the Little River and Presumpscot River in Gorham.
5. The area in Gorham from just north of the power line near Mosher Brook to the Westbrook town line.
6. In Westbrook, from just below the railroad near the Windham/Gorham town lines, to the Golf Course, about three quarters of a mile downriver.

Securing Permanent Protection on Limited Protection Lands

In addition to defining priority high value natural resource protection areas, there is an opportunity to enhance the level of protection that exists on a number of parcels along the river

held in public ownership but lacking any deed restrictions to ensure their status as open space lands in perpetuity. For a minimal cost, a restriction could be placed on the deeds for these lands to accomplish permanent protection.

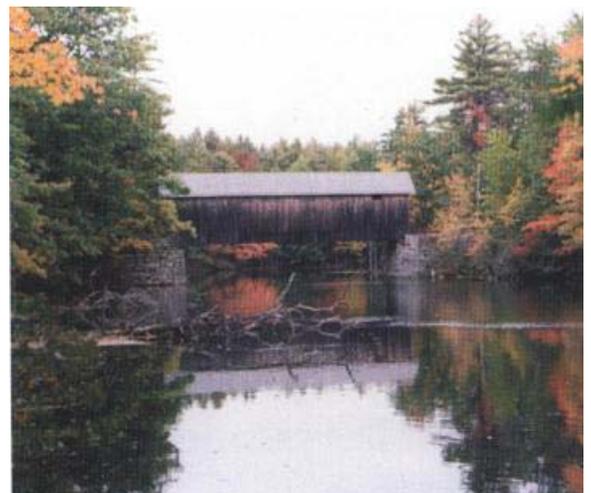
For further information, see the white paper "Protecting and Enhancing Open Space Along the Presumpscot River" and accompanying maps listed below, which are posted on the Casco Bay Estuary website:

<http://www.cascobay.usm.maine.edu>

Open Space Maps

(available at the above website)

- Map 1: Developed and Undeveloped Areas Along the Presumpscot River Corridor
- Map 2: Open Space with High Natural Resource Values
- Map 3: Public Recreation Lands and Public Access Points Along the Presumpscot River Corridor
- Map 4: Resource Protection Zones Along the Presumpscot River
- Map 5: Open Space Protected by Ownership or Easement
- Map 6: Open Space Vulnerable to Development
- Map 7: Priorities for Open Space Protection Based on Natural Resource Values



A Vision for the Future: Findings and Recommendations

Findings

The future of the Presumpscot River is full of possibility:

Fisheries: Events of the recent past position the river for an unprecedented recovery. Water pollution on the river has been greatly abated with the development of water treatment facilities and SAPPi's elimination of its pulp mill. The removal of the Smelt Hill Dam, at head-of-tide has provided migratory fish species unimpeded access to the lower seven miles of Presumpscot River for the first time in over a century. Migratory fish, either remnant populations from the Presumpscot or strays from other river systems, can now recolonize the lower river. With full recolonization, the river as far as Cumberland Mills Dam in Westbrook (including access to habitat in the Piscataqua River and Mill Brook) could support runs of approximately 13,000 shad, 78,000 blueback herring, 20 to 100 Atlantic salmon, and 150,000 to 200,000 alewives. State and federal agencies have changed how they view the future of the river, and are now calling for restoration of migratory fishes to more of the river, above the Cumberland Mills Dam in Westbrook.

Open Space: Because most of the area along the Presumpscot River remains undeveloped, there are extensive opportunities to protect the area's open space values, to improve public access, to provide trails either to or along the river and to provide a variety of other recreation facilities and opportunities. The time to seize this opportunity may be limited, however, as development pressures are increasing. In the past, development along the river below Westbrook has been slowed by the negative environmental side effects of the pulp mill in Westbrook and the availability of more attractive waterfront property in the region.

Today, the mill's pulp operations have been eliminated, and so too have its attendant by-products of water pollution, and offensive downwind odors. Partly as a result of this change, the potential for development along the Presumpscot River has never been higher.

Cumulative Impacts: The Presumpscot has a rich history. The power and water supply provided by the Presumpscot were fundamentally important to the early development of the area, and the rise of an industrial economy along the river. The Presumpscot River was the site of Maine's first pulp mill, first hydroelectric project, only significant canal, and largest gunpowder mill. The river and its management continue to impact the region's economy; dams on the river are still a low cost producer of electricity and contribute economically to the SAPPi paper mill in Westbrook, which uses the power. Development of dams on the river had its costs however. A case in point is that migratory fishes were eliminated from the river – the Presumpscot was the site of one of the first serious disputes over water rights in Maine (fish versus dams). The dams also eliminated trout and salmon habitat and opportunities to fish for these species. Later, industrialization of the river reduced water quality and degraded the aesthetics of the river, reducing its attractiveness for boating, swimming, and other forms of recreation. All of these impacts have had economic impacts, as well as impacts on the quality of life enjoyed by residents and visitors.

The challenge, and at the same time the opportunity before the Steering Committee, is to find solutions to problems which reduce cumulative impacts, improve the quality of life for residents and visitors, and contribute to a vibrant local economy that supports new and traditional industries.

A Vision for the Presumpscot River

The Presumpscot River, including its tributaries and shorelands, is managed to realize the greatest good for all its communities, both human and ecological, through a careful balancing of all potential uses. The river supports the production of renewable energy, and the full range of natural and economic benefits and uses that are dependent upon a restored and ecologically healthy river, including the benefits to resident and migratory fish and wildlife, and the use and enjoyment of the river for open space and recreation.

In pursuing this vision, the participants in this planning effort recognize two important and inescapable conclusions:

- 1) balancing and optimizing among potentially competing uses, values and interests is complex and requires considered judgments on how to integrate uses to achieve the greatest overall benefits;
- 2) the optimum mix of uses and management of the river will change over time as our knowledge and society's needs change.

Thus, the planning effort should not be viewed as "finished" at any point in time. Rather, to be effective, it will require a periodic reexamination of the issues involved in management of the river. In fact, this shift in our understanding of appropriate management, and the changing needs of our society over the last two centuries is what has prompted renewed interest in the Presumpscot, and a reexamination of its management.

Recommended Management Objectives

- Restoring, preserving, or enhancing riverine (free-flowing) habitat from Gambo Dam to Casco Bay.
- Restoring self-sustaining populations of native resident fish, and sea-run fisheries.
- Providing access to the entire river (as far as the dam at Sebago lake) for sea-run migratory fish, consistent with the management recommendations stated in the Draft "Fishery Management Plan for the Presumpscot River" prepared by the Maine Department of Marine Resources, Maine Inland Fisheries and Wildlife Department, and Maine Atlantic Salmon Commission (December 2001).
- Encourage operation of hydroelectric projects at Gambo, Dundee, Great Falls, and Eel Weir for maximum production of electricity and minimum impact on local ecosystems.
- Assuring the Presumpscot's waters are clean and are ranked at their highest practicable classification and are attaining these standards.
- Striving to reduce or eliminate existing point-source and nonpoint source discharges into the Presumpscot River and its tributaries.
- Minimizing the impact of nonpoint source pollution on the river.
- Protecting meaningful areas of open space along the Presumpscot River and its tributaries to preserve or improve wildlife habitat and provide healthy riparian buffers.
- Providing for additional public access and low-impact recreation along the river and its tributaries while preserving some lands for wildlife only.
- Promoting the economic, community and ecological benefits of a healthy river system.

Recommended Actions

The following is a summary of recommended actions developed by the Steering Committee with input received at public meetings. Appendix A includes a more complete listing and detailed treatment of the Plan's Recommendations, describing the need, cost, and implementation strategy for each recommendation. Appendix B is a record of comments received on the Draft Plan, and the Steering Committee's response to those comments.

These recommended actions are ranked in relative importance (High, Moderate, Low), reflecting the priorities of the Steering Committee, informed by rankings by participants at the May 7, 2003 public meeting. Attendees registered their priorities on a master list of recommended actions. The Steering Committee found that the participants in this exercise substantially confirmed their own sense of priorities. The results are presented below.

Establish a Presumpscot River Council

Establish a Presumpscot River Council to provide the framework and the resources needed to effectively implement the plan. The Council would provide an organized effort to secure funding and to coordinate resources needed to carry out the recommendations in this Plan. It would also serve to provide an ongoing mechanism and capability for addressing issues arising in the future that may affect the River. The Casco Bay Estuary Project should convene a task force, including members of the Presumpscot River Management Plan Steering Committee, to consider options for how the Council might be structured and organized, and to take whatever steps are needed to establish the Council.

(Top Priority – High Importance)

Restore Fisheries

Support efforts to achieve restoration of fish passage to the river above Cumberland Mills Dam. The preferred option is through removal of three small dams below Gambo Dam, and installation of up to three fish passage facilities as needed to accomplish full access when sea-run fish migrations reach population levels determined to warrant additional passage (**High** -- supported by 91%

of the participants at the May 2003 public meeting).

Protect Open Space

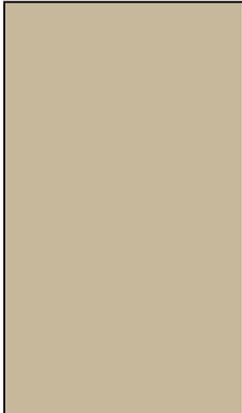
- Conserve open space parcels with a focus on high value areas (**High**).
- Educate landowners and other watershed residents about the benefits of conserving and enhancing riparian lands along the Presumpscot River and its tributaries (**High**).
- Encourage permanent dedication to open space for areas which are already publicly owned but not so dedicated (**Moderate**).
- Encourage expansion of local Resource Protection Districts to include the entire floodplain as it is being remapped by the U.S. Geological Survey (**Moderate**).

Enhance Recreation

- Develop a water trail the length of the river (**High**).
- Create new access points to the river where needed and appropriate (**High**).
- Develop a land trail along the river as feasible (**Moderate**).
- Renovate portions of the Cumberland and Oxford Canal as historic/recreational resources (**Low**).
- Assist with improvements to Riverton Trolley Park (**Low**).

Protect and Improve Water Quality

- Support comprehensive stormwater management efforts (**High**).
- Reclassify the river to Class B from Saccarappa Falls to tidewater (**Moderate/High**).
- Extend Casco Bay Estuary Project's Toxic Monitoring Program to include more sites at the mouth of the Presumpscot River (**Moderate**).
- Identify potential inadequate treatment of point sources of pollution where they exist (**Moderate**).



Reflecting the Views of Presumpscot River Management Plan Steering Committee

With Funding and Assistance Provided by Casco Bay Estuary Project

And U.S. Environmental Protection Agency, Region 1

Facilitation, Analysis and Technical Assistance Provided by Land & Water Associates, Hallowell, Maine



Control Nonpoint Source Pollution

- Support the CCSWCD’s Erosion Control Training for Communities (*High*).
- Implement nonpoint education for municipal officials (*High*).
- Identify and remediate nonpoint sources of pollution (*Moderate/High*).
- Support erosion control technical assistance for landowners (*Moderate*).



Improve River Corridor Habitat Improvement

- Protect and enhance the riparian corridor by re-establishing forested buffers and siting development appropriately (*High*).
- Protect significant wetlands through purchasing, restoration efforts, and protective buffer projects (*Moderate*).
- Continue efforts of the U.S. Fish and Wildlife Service’s Gulf of Maine Program and the State of Maine to provide information to communities in the Presumpscot River Watershed and work with the communities and land trusts to develop protected wildlife corridors (*Moderate*).
- Encourage local citizens to perform stream habitat walks within the tributaries of the Presumpscot River (*Moderate*).

Support Stewardship/Public Education

- Support natural resources education for schools (*High*).
- Educate property owners of negative effects of pesticides (*High*).
- Inform public of Fish Advisories (*Moderate*).

Ensure Adequate Flood Protection

- Develop a flood mitigation program for the Presumpscot River Watershed (*Low/Moderate*).