

# Alewife Stormwater Wetland

## Cambridge, Mass.



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Cities across America have found creative ways to integrate green infrastructure with recreation in new and existing parks.

Before the development of today’s Massachusetts communities of Cambridge, Arlington, Medford, and Somerville, the area was a low-lying, spongy wetland. Over the years its ecology was severely disrupted by dredging, mining, and dumping, and most of the land – which once protected the water quality and modulated the flow of Little River, Alewife Brook, and the Mystic River – has since been developed for housing and industry. However, back in the 1890s the Commonwealth of Massachusetts had the foresight to preserve 130 natural acres, now managed as the Alewife Reservation by the Department of Conservation and Recreation (DCR).

Unfortunately, with DCR's severe underfunding, by the 1990s the Alewife Reservation was derelict land, overgrown with invasive plants, lightly visited by wildlife, home to some sturdy indigents, and shunned by most everyone else. But when the city and the state came under court order to end the [pollution of Boston Harbor](#) through the separation of sanitary and storm sewers, the reservation presented itself as an outstanding potential solution.

"Until we started talking about stormwater capture, hardly anyone even knew there was a stream down there," said Catherine Woodbury, a project manager with the [Cambridge Department of Public Works](#).

Historically, the Alewife basin posed a huge stormwater problem for residents and the state. In the 1980s, that one basin had an average of 63 sewer overflows per year that dumped about 53 million gallons of raw sewage into the brook. Roadway flooding and sewer backups occurred regularly, even with storms as relatively small as two-year events. Larger storms caused such bad flooding that the city's nearby drinking water reservoir itself was compromised. But utilizing a green infrastructure approach was not the state's initial impulse.

"The [Massachusetts Water Resources Authority \(MWRA\)](#) came to us asking to put a giant underground concrete cistern in the Alewife Reservation," said Dan Driscoll,

director of recreational facilities planning and design for DCR. "We didn't like that idea at all. We said, 'Is there some way we can make this stormwater work with the environment rather than against it?' They said, 'Can you handle 3 million gallons at one shot?' We said, 'Let's find out.' We hired a bioengineering firm to do the analysis and undertake public outreach."

DCR had an additional agenda in mind. Long cognizant of the reservation's shortcomings as an urban park, the department in 2003 had produced an ambitious [master plan](#) calling for a bikeway, a lengthy boardwalk, a bridge, the removal of polluted soils and invasive plants, and replanting with appropriate plants, at a price tag of about \$3 million – money it didn't have. As mitigation for using Alewife as a stormwater wetland, DCR asked the sewer authority to pay for those upgrades. When the bioengineering numbers came back looking good, the MWRA agreed to the extra expenses. But just then, thanks to the public discussion, some fierce opposition arose.

"They thought it was an inappropriate use of parkland," Driscoll said. "They appealed under the wetland protection act. It was a group of only about 10 people, and they lost in every court, but it held things up for four-and-a-half years."

"Defending against the opponents in court cost the city of Cambridge \$4.5 million," said William Pisano, a principal



with MWH Global, which engineered the wetland. “Beyond that, I calculated that during those years of delay there was enough sewer overflow to cover the entire city of Cambridge to a depth of seven inches.”

The opponents finally ran out of money, but the tricky engineering itself was also time-consuming. The designers not only wanted millions of gallons of stormwater to enter the wetland, but they needed the water to slow down and drop its suspended sediment. They also had to provide an escape route in the case of too much water. And they had to provide a “reverse” mechanism during times of drought so that water from the wetland could keep at least a trickle in the brook to maintain fish habitat.

The park agency got one more benefit from the multi-agency arrangement: the city of Cambridge agreed to

operate and maintain the area by sweeping streets and cleaning sediment from filters. “We worked out a really great operations and maintenance process,” said DCR’s Driscoll. “This level of maintenance is definitely something we would not have been able to afford on our own.”

“It’s been a great partnership,” said Cambridge’s Woodbury, “DCR provided 3.4 acres of bottom land, the city and the Metropolitan Water Resources Authority shared in the \$17 million cost of construction and utility relocation, and Cambridge got much less flooding and a cleaner river.”

“Best of all are the people coming from all over to use the park,” concluded MWH’s Pisano. “They showed up from the very first day, and they tell us how much they love it. Going out there on the trail now is like walking through a Monet painting.”



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This case study is excerpted from *City Parks, Clean Water: Making Great Places Using Green Infrastructure*.

The full report and additional materials are available for download [here](#).

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