

# City & Region

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## Low ground water levels blamed for faulty foundations



A structural monitoring device is installed in the basement of a building on Hemenway Street.

By Gareth Cook

GLOBE STAFF

**D**ozens of buildings, and perhaps hundreds, are sinking on their foundations in the South End, Fenway, and other Boston neighborhoods because of low ground water levels, say engineers — just as the city is cutting funding for the office that monitors the problem.

Chute Hall Construction, a company that specializes in foundation repair work, says it sees about two dozen damaged buildings per year, but engineers say there are more cases. With the cost to repair a typical building running from \$150,000 to \$200,000, the total repair cost for homeowners in the South End alone could reach \$120 million, estimates Jim Lambrechts, an engineer with the firm Haley & Aldrich.

The problem of sinking founda-

tions most famously struck lower Beacon Hill in the 1980s, but is a risk across large swaths of the city built on 19th-century landfill. Ground water can drain away through underground construction, tunnels, or leaky sewers — and as it does, the wooden pilings that support older buildings are exposed to air and start to rot.

“Tomorrow I could wake up and the back wall of my house could have buckled so badly that my house will be uninhabitable,” said Joseph Linkin, a resident of Holyoke Street in the South End, whose next-door neighbor recently had to rebuild his foundation. “It is like a tornado ripping through downtown Boston, except it is happening in slow motion.”

The city, however, plans to cut funding for the Boston Groundwater Trust, the organization set up to track the problem. A spokesman for

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# Low ground water blamed for sinking buildings in S. End, Fenwa

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Mayor Thomas M. Menino said this week that the city's contribution to the trust for fiscal year 2003 will be \$25,000 — just half its previous budget — with the expectation that the trust would raise more money from other sources.

The trust was established in 1986, after millions of dollars in damage was discovered to Beacon Hill properties. Since then, though, the trust has not had the money to build enough wells to give a clear picture of the city's ground water problem, engineers say. The trust monitors 150 wells, and engineers estimate that several hundred more are needed.

A map compiled by the Globe shows that many potentially affected areas are poorly covered by monitoring wells. Data from existing wells, while incomplete, show that sections of the South End, a sliver of the Fenway, and portions of Back Bay, Beacon Hill, and Chinatown have dangerously low ground water.

"In the last three or four years, we have seen this crop up more and more in the South End and Fenway," said Lambrechts, who helped trace the trouble in Beacon Hill in the 1980s to a leaking sewer line. Lambrechts bases his \$120 million estimate of damage in the South End on his knowledge of the city's geology and years of work on buildings with failing foundations.

The trust has also encountered

resistance from the city in getting permission to dig new wells. In the summer of 2000, the trust applied for permits to dig 35 new observation wells, according to Tim Ian Mitchell, co-chairman of the trust. The city asked the trust to provide more information about the wells, which it did in November 2001. The applications are still pending, Mitchell said, adding he was hopeful it would be resolved.

Complicating the sputtering effort to craft a solution has been the fear of legal liability. In the mid-1980s, residents of Beacon Hill's Brimmer Street sued the Massachusetts Water Resources Authority, the Metropolitan District Commission, the Boston Water and Sewer Commission, and the city, arguing that they had negligently allowed the ground water levels to drop. The cases were all settled by 1992, but the terms are protected by a confidentiality agreement, according to Peter Koff, the plaintiffs' lawyer.

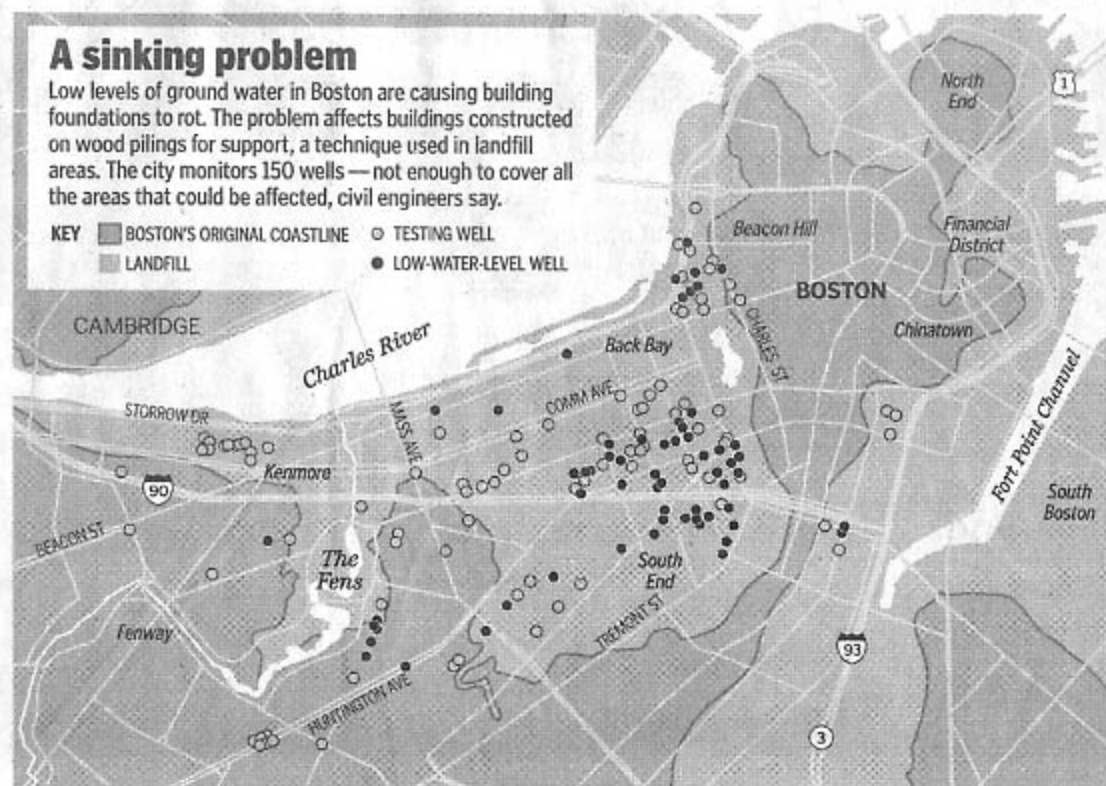
"The city is very, very concerned about its liability," said one lawyer who has followed the issue for years.

In individual cases, property owners usually can't identify what is causing the drop in ground water beneath their building. For example, at a brick apartment building in the Fenway, at 143-149 Hemenway Street, the building operators discovered they had a problem when they noticed a large crack in the foundation and a wall that seemed to be tilting, accord-

## A sinking problem

Low levels of ground water in Boston are causing building foundations to rot. The problem affects buildings constructed on wood pilings for support, a technique used in landfill areas. The city monitors 150 wells — not enough to cover all the areas that could be affected, civil engineers say.

**KEY** ■ BOSTON'S ORIGINAL COASTLINE ○ TESTING WELL  
■ LANDFILL ● LOW-WATER-LEVEL WELL



GLOBE STAFF GRAPHIC

ing to Steven Carvill, the regional maintenance director for SHP Management.

Like many property owners, SHP focused on solving the problem with its property rather than paying for an expensive engineering study to determine where the local ground water may be leaking.

On the same street, a large residence hall owned by Northeastern University has a rotting founda-

tion because of low ground water, according to a spokeswoman for Northeastern. Both Hemenway Street buildings are safe, engineers have determined, but the university will undertake expensive repairs on their building this summer, she said.

At another location, on Hulyoke Street, at least one of the causes of the lowered ground water has been identified: the Orange Line. Linkin, who is helping orga-

nize a grass-roots effort to bring attention to the issue, said he can peer through a grate and see ground water leaking. Last fall, the MBTA began repairs on the leak, Linkin said, and has promised to resume work on Monday.

Yet even in situations where a leak is identified, the process of bringing the ground water all the way back up — and the question of who is at fault — can be exceedingly complex, according to Mark Ha-

ley, senior vice president of & Aldrich. With underground structures, he said, it is not usual to repair one leak and see ground water rise only a little; it finds another leaky structure at a higher level.

Fixing these buildings is laboriously excavating around wooden pilings and replacing them with steel and concrete below the water table.

"We are finding a lot of people are buying their homes and don't know about it," said Chute of Chute Hall Construction Co. "And then they are in shock down the road."

Several neighborhood organizations are organizing a forum on ground water, which will be at the YWCA on Clarendon on May 21, from 7-9 p.m.

To determine precisely how low the ground water is across considerable areas would require stalling a network of several hundred more wells at a cost of \$2,000 per well, according to Lambrechts — money the trust does not have.

City officials argue that the trust's funding should not solely come from the city. "The many other entities that should have an interest in this," said Tonia Pollak, the director of the city's Environment Department.

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