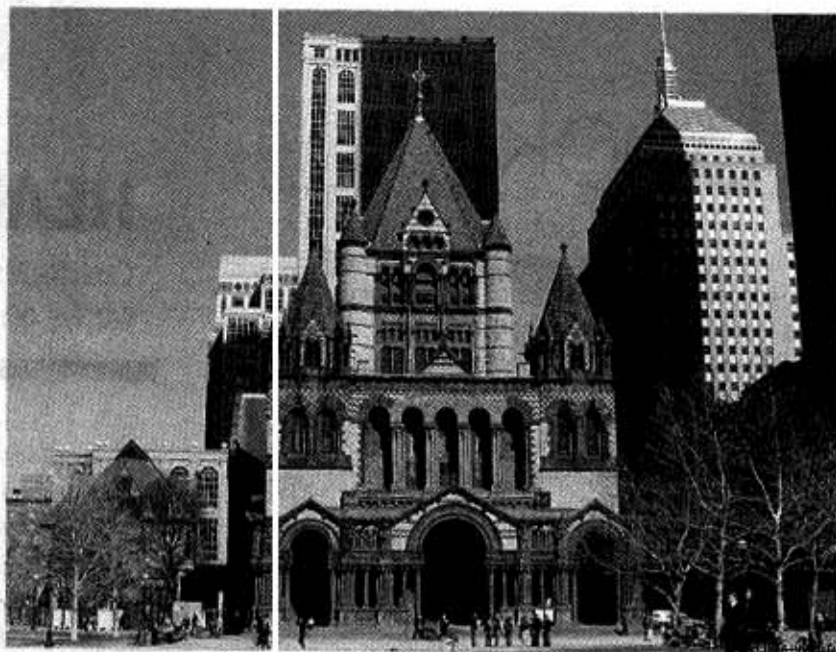


Could the Back Bay Crumble?



There are more than 5,000 wood pilings under Trinity Church.

Awareness rises over groundwater woes

written by Catherine Sheffield

Peter Sherin has been a resident of the Back Bay since 1976. He bought his home on the block between Berkeley and Arlington before the cost of property skyrocketed.

Sherin had known that much of the Back Bay was originally built on tidal flats and supported by wood pilings, but he had no reason to think his home was in any serious danger.

It may be. And so are homes, businesses, churches, and public spaces throughout the Back Bay if the unseen and widely misunderstood problem of shrinking groundwater levels is not addressed. Even

billions. That's why some in the Back Bay actually root for rainy days, like the members of the Boston Groundwater Trust (BGWT).

WOOD ROTS

A couple years ago, the Trust alerted residents on Sherin's block about the growing, or receding, problem. The state's Department of Conservation and Recreation (DCR) took groundwater level readings before repairing the Storrow Drive underpass, and found that there were low levels of groundwater in the blocks near Sherin's house. Sherin, the chairman of the Neighborhood Association for the Back Bay, had heard of the damage low groundwater levels can cause and was concerned when he got the news.

"I was aware that there had been residents who have had to underpin [recap the wood pilings beneath the foundation] their homes after this happens, and it can cost upwards of \$250,000," Sherin said. He's heard of residents who have had to do it more than once. "But that's a worst case scenario," he says, "I knew that there were preventative measures I could take if the damage hadn't gotten to that point."

The "damage" is rot that can occur when air reaches the wood pilings beneath many of the stately brownstones and buildings in the

Back Bay, South End and the flat of Beacon Hill.

"To get an idea of how many pilings can be supporting a building," says Elliott Laffer, executive director of the Trust, "there are more than 5,000 pilings under the Trinity Church." He also says over half of the residential property in the city of Boston is in at risk areas.

While the "50 percent of homes at risk" estimate seems to be less widely known, it's Boston lore that tidal flats where the Back Bay is now were filled in and enclosed in the 1800s, a process called "land making." Wood pilings were driven into the ground to support new

buildings. In order to keep the wood pilings from rotting, Laffer says they must remain completely immersed in water. A typical groundwater level under the city's filled neighborhoods is 7 to 8 feet. In order to ensure that air does not reach the pilings, a level of at least 5 feet of groundwater must be maintained, Laffer says.

"Pilings work like a charm," says Laffer. "We use them all the time in building, except today they're made out of cement or steel. Back when the area was first built they used wood, and when wood that's immersed in groundwater comes in contact with air, it can rot. That's the problem."

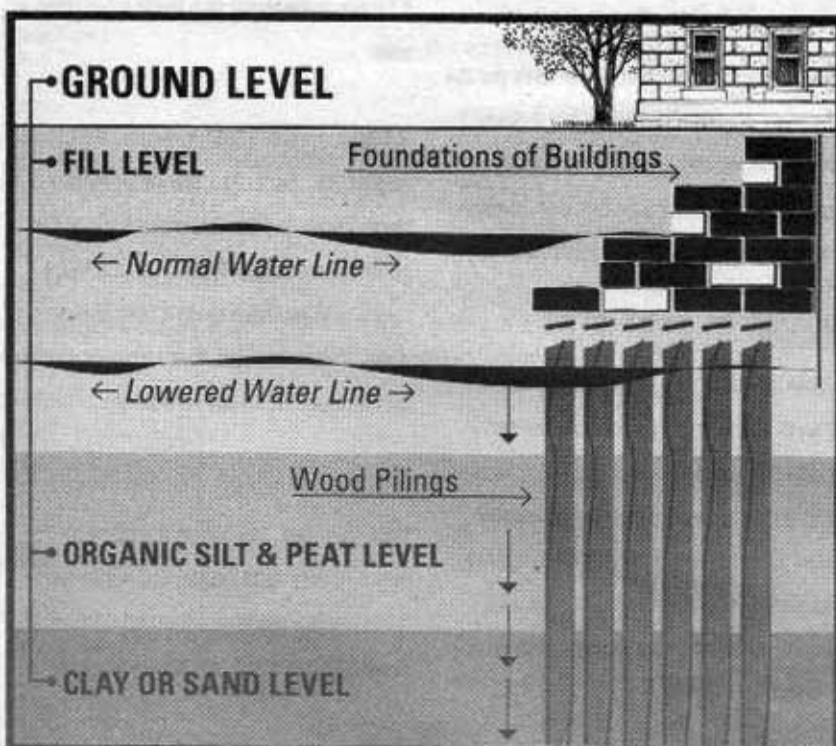
If the damage is far enough along, a resident may opt to underpin the pilings beneath their house, the one thing Peter Sherin was hoping to avoid.

In order to inspect the pilings beneath his home Sherin had a test pit dug. To have a pit dug costs approximately \$6,000. Upon inspection Sherin says they were lucky to find no effect on the residences and, he says, for very little cost he left a monitoring well (only two inches in diameter) where the pit had been. The well, he says, enables him to continue to monitor the water level for his own knowledge, but is also included in the network of wells monitored by the Boston Groundwater Trust.

OLD PROBLEM, NEW ENERGY

The Boston Groundwater Trust was established in 1986 to investigate and monitor groundwater levels; however, funding was limited and Laffer says the trust was neglected and after a few years ultimately became inactive. Only recently, under Boston Mayor Thomas Menino's administration in the mid-1990s was it revived.

In 2002 State Representatives Paul Demakis (retired, Eighth Suffolk) and Byron Rushing (Ninth





Settling was first noticed in 1929 at the Boston Public Library.

Suffolk) became vocal proponents of the groundwater issue. Representative Marty Walz (Eighth Suffolk) says the representatives were instrumental in the passage of legislation to include \$1.6 million in the Environmental Bond Bill to aid the monitoring of groundwater levels and have been successful in getting the bonds dispersed in three annual pieces, with the last received this year.

Laffer says groundwater levels have set off alarms in the city as far back as 1929 when settling was first noticed at the Boston Public Library. He says that throughout the years many buildings within the city have experienced settling due to lowering groundwater levels.

"Settling happens to old buildings, that's nothing new," says Laffer. "But when groundwater levels lower to the point that causes decay in the pilings, the damage can be costly."

The issue of groundwater has waxed and waned over the years. Representative Rushing says that unfortunately from the 1970s to the 1990s the issue was nearly forgotten.

"The original WPA (Works Progress Administration) monitoring wells were put in during the Depression," Rushing says, "but after that they were literally forgotten."

Rep. Rushing says the first problems were seen in low-income neighborhoods, but without enough money to restore the buildings, they were just torn down. As the Back Bay and South End neighborhoods became more gentrified, people became more concerned. He says the final wake-up call came when severe problems occurred on the flat of Beacon Hill.

"After that we began to really persuade the city and state to get involved, and they have," he says. A comprehensive public meeting set for next week may signal that attention to the issue is truly on the rise.

The Boston Groundwater Trust has reopened more than 100 wells dug by the WPA in the 1930s and, with the money from the 2002 Environmental Bond Bill, has continued to install monitoring wells all over the city. Laffer says that if all goes well during construction season (which begins April 19) the Trust will

install 350 wells this year, making a total of more than 800 across the city.

The Trust posts the most recent readings from all their wells on their website, <http://www.bostongroundwater.org>. Laffer encourages residents to visit the site and look at the readings from the wells in their neighborhood.

Sherin says concerned residents should be aware that there are other remedial efforts to consider. The new Columbus Center complex, the half-billion-dollar project slated for the four-block stretch over the Mass Pike in the Back Bay and South End, is implementing one such effort.

The Columbus Center will be the first major development project in Boston to incorporate rainwater collection and a groundwater replenishment system in its construction. In the design, the Center will incorporate a series of roof collection troughs, pipes and pumping boxes that will deliver rainwater into the ground.

Sherin says this can be done similarly at a residential home using French drains or redirecting roof gutters to run into a garden or lawn. He says he has been told if all the water from roof runoff on a typical block in the Back Bay ran into gardens or lawns one million gallons of water could be put back into groundwater. Laffer also offers dry wells, a sort of a mini storm-drain system, as another option to consider.

An educational forum set for Tuesday, April 5 at the Boston Public Library will give area residents an opportunity to learn more about the critical problem of fluctuating groundwater levels. The forum, organized by 22 neighborhood organizations, business groups, and non-profit organizations, has been put together to discuss the mounting concern among hundreds of Back Bay, South End and Beacon Hill residents.

UNFORSEEN ADVANCEMENTS

Laffer emphasized that the problem of groundwater levels is "huge and complex." The reduction in groundwater levels is caused by many factors and cannot be pinned on any one thing.

"When the pilings were installed they didn't plan on things such as pavement, subway systems, sewer systems and cable conduits," he says, all of which can affect the water table.

More than 2,000 acres of land in Boston are built on or near areas where pilings are used, Laffer says. "Virtually all the areas that tourists visit are vulnerable." He says it's imperative that residents understand the severity of

groundwater levels and the damage the lowering of levels can cause.

Susan Scott, president of the Groundwater Emergency Taskforce says that is why the educational forum is so important.

"We're taking a preventative approach," Scott says. "You have to repair the reasons for the immediate problems first, and then create a system of safeguards."

Scott says the main objective of the forum is to continue to raise awareness on the gravity of the issue and bring all the players together to discuss future preventative steps.

"We can't stop the issue, but we can always and forever keep on top of it and learn to manage it," she says.

Representative Walz agrees with Scott.

"It's important for property owners to attend the forums and meetings and learn not only about the problem, but how to solve it," she says.

"We're finally at a point where everyone's listening," says Rep. Rushing. "Now we need to figure out new ways to keep the water at the right level and maintain it."

The Groundwater Educational Forum will be held on Tuesday, April 5, 6:30 p.m. at Rabb Lecture Hall in the Boston Public Library.