The Power of Water

Old Streams and Springs Fight All Efforts to Contain Them

By LYNN M. ERMANN

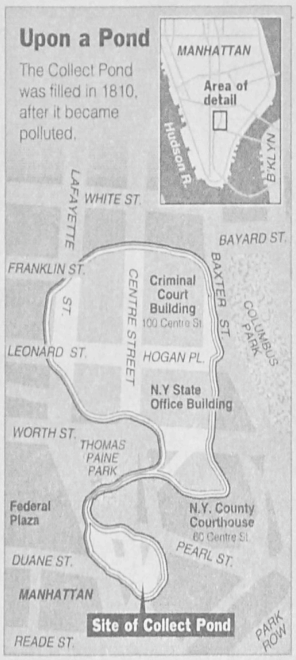
ELEVEN years ago, a worker on a construction project at 60 Centre Street in lower Manhattan drilled a hole in the floor of an elevator shaft and unleashed a surge of water four feet high. The source of the fountain? A pond below the foundation.

Like other buildings in the Foley Square area, 60 Centre Street, the New York County Courthouse, sits above a large body of water that was called the Collect, or Collect Pond, in the 18th century. Though the pond was filled in 1810, some buildings in the area use pumps to keep the trapped water from coming up, said Robert Carney, an engineer working at 60 Centre Street. If you look under a manhole cover in the pump room of 100 Centre Street, the Criminal Court Building, he said, "you can see the water coming in, fast."

Many of New York City's old bodies of water have survived in some form, even beneath tons of concrete and steel. In Riverdale, in the Bronx, the basement of the 50th Precinct police station at Kingsbridge Avenue and 230th Street is periodically flooded by water from covered streams surrounding the station house. New York University Law School, near Washington Square, was built over Minetta Brook. A bit of the brook — a hole in the ground filled with murky, slow-moving water — is visible under a grate in the basement. (The law school is also rumored to have a freshwater spring that spurts out of the fountain at 50 West Fourth Street, but its facilities manager, Frank Conti, says that story is false. The school pumps the water into the fountain.)

Then there is the tale of the basement of the Delmonico Hotel, at 59th Street and Park Avenue. According to a report in The New York Times on March 22, 1963, hotel employees went fishing there and caught sunfish in a "cemented channel" of the old De Voor's Mill Stream. The manager of Delmonico's, Joe Kaminski, said it was his understanding that an employee had been fired in the 1930's for catching fish in the basement. Now, he said, there is a pump system down there.

In the 1950's, another story goes, science teachers at the old Stuyvesant High School on East 15th Street, now the High School for Health Professions and Human Services, collected water from a basement spring to use as pond samples in class. The school custodian for the last 34 years, Frank Drayton, keeps two chairs at the foot of the basement stairs to climb on when the water gets too high.



John Gillen, the building engineer for Chelsea Market, at 15th Street and Ninth Avenue, said he first heard about a spring on the site in 1965, when he started working there. "We see evidence of it in the basement, water in the oiler pits," he said.

Though springs are often omitted from old maps, the streams below N.Y.U., the 50th Precinct and the Delmonico are usually shown. Still, it is easy to forget that New York City was once a lush wilderness, crisscrossed with waterways rather than subway lines. "When the Dutch arrived, there were two dozen streams and four dozen ponds in Manhattan," said Joyce Gold, the author of "From Trout Stream to Bohemia" (Old Warren Road Press, 1988) and other guidebooks.

Relics of a greener time remain. A stream that once flowed from the area that is now between 181st Street and Dyckman Street in upper Manhattan left a steep valley with a ridge on either side, said Sidney Horenstein, a geologist at the American Museum of Natural History. On what is now Canal Street in lower Manhattan, a canal used to flow out of the Collect Pond. On Spring Street in SoHo, there actually was a spring, which in the late 18th century was tapped by Aaron Burr's Manhattan Water Company. Brook Avenue, in Mott Haven and Morris Heights in the Bronx, was built over a brook in 1826.

By the beginning of the 20th century, the city's streams and ponds had been covered over, partly because of health concerns, though development was also a factor.

"Before people knew about bacteria and viruses, they were always trying to figure out what caused disease," Mr. Horenstein said. One theory, he said, was that diseases were caused "by gases emanating from unknown substances from wet, boggy areas."

Many watery areas were polluted. The Collect Pond, Mr. Horenstein said, was "a stinking hole" by the time it was filled in, because everyone in the neighborhood, from butchers to tanners, threw waste into it. The land just to the east later became the Five Points district, a notorious, swampy slum.

In the foreword to "Springs and Wells of Manhattan and the Bronx" (New-York Historical Society, 1938), which James Ruel Smith wrote in 1916, he noted that "many springs are still running but they are out of sight in cellars or subcellars of basements."

These bodies of water were covered, but the sandy beds continued to collect water, even if they stopped being springs, streams, rivers and ponds in the usual sense. A stream like the one under N.Y.U. is actually "a former stream that is part of the ground water," Mr. Horenstein said.

Some underground bodies of water have changed shape over time. Six years ago, engineers found that the basement of "a nice Fifth Avenue building" at 64th Street had been heavily eroded by a stream, said Joseph Tortorella, a principal at Robert Silman Associates, a structural engineering firm that handles about a dozen projects annually involving streams, springs or ponds. The floor of the basement was so hollowed out that "you could walk around underneath," he said.

Streams may also suck soil out from under structures, which is what caused a building at 64th Street and Park Avenue to lean on one side. Mr. Tortorella is involved in repairing the building.

Because waterways are sometimes unearthed during construction, contractors often check old maps for the sites of streams and ponds. Mel Febesh, a partner at Urban Foundation/Engineers, a construction company in the city, calls his map "the Old and New Testament."

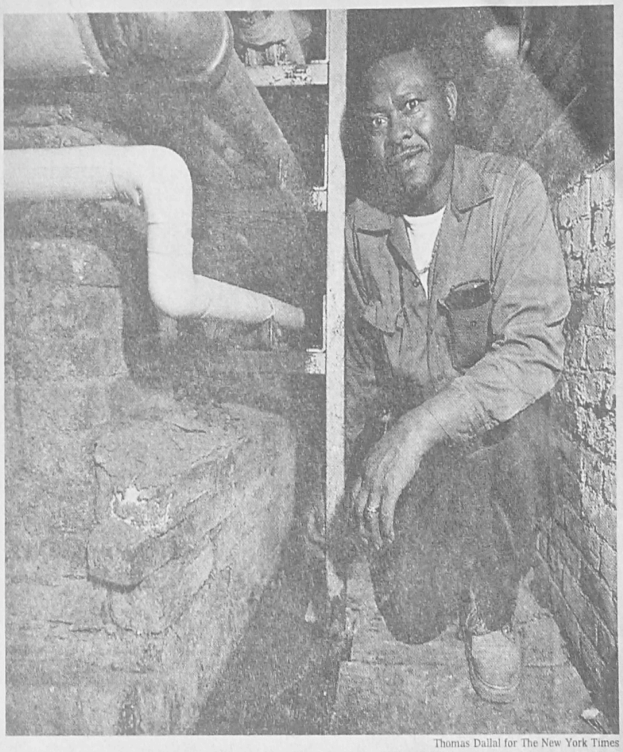
In 1983, during excavation at 150 West 17th Street, where a Barney's women's store had been situated, workers hit water from an underground stream. "We put an elaborate system in place to divert the water," recalled the project manager, Joseph Pepe. He said the water was used for the building's cooling towers.

Subway lines can also affect underground water systems. The deputy director of the Bureau of Site Engineering at the city's Department of Design and Construction, Michael Greenman, said that when the city extended the Q line in the late 1980's, the flow of a stream beneath the Avenue of the Americas between 56th and 59th Streets was pushed east and west, Mr. Greenman said, which resulted in sidewalks buckling. Repairs are scheduled to begin this summer.

Recently, New York City Transit waterproofed the Lenox Avenue line from 110th to 117th Streets, which for some 90 years was flooded with water thought to be from the old Harlem Creek. A 1907 New York Times article, with the headline "Stream Flowing in the Subway," reported: "Unknown to the thousands of passengers who have traveled over the Lenox Avenue Division of the Subway in the last few days, water springing out of the earth from some mysterious source has flooded the tracks."

Over the years, the water rusted away nails and sucked soil from below the tracks, causing the bottom of the tunnel to collapse. Attempts to stem the tide, as when the Transit Authority pumped grout under the tracks in 1991, didn't last long. (By 1993, the tunnel flooded again.) Last year, the authority spent $128 million to replace the support structure beneath a 2,500-foot stretch of tracks and install wells and pumps. "We put down waterproofing material underneath the track," said the project's construction manager, Uday Durg.

But will this engineering feat overpower the old river? Mr. Greenman is skeptical. "It will take over again," he said. "Water finds a way into everything."



Thomas Dallal for The New York Times

Frank Drayton for 34 years has been dealing with water in the basement of the school on 15th Street where he is custodian. Now the High School for Health Professions and Human Services, the building used to house Stuyvesant High.

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