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Stench at Sewage Plant Is Traced; Millions Pledged for Repair Work

By MICHAEL SPECTER

After years of community outrage and scientific confusion, New York City officials have finally identified the central source of the debilitating odors at the city's sewage plant on the Hudson River in Harlem: they come from beneath an eight-block concrete roof where acres of foul air collect until periodic gusts roll off the river and blow them onto land.

Correcting the design problem -- and several others in the city's newest, most expensive and most angrily protested sewage plant -- calls for up to \$100 million to be spent to enclose the plant fully, according to city officials. Mayor David N. Dinkins, who as a West Harlem political leader spent nearly 20 years fighting the plant, has told aides he will commit at least \$50 million in capital funds for repairs to a project that has already cost \$1.3 billion.

Environmental officials and neighborhood advocates agree that a long, angry chain of events led to the North River plant's intractable problems. The plant's placement along the Hudson between 137th and 145th Streets, its price tag, and the political decision to put a \$130 million state park on top of a factory that processes 170 million gallons of raw sewage every day, all combined to provide one of the nation's boldest examples of how the design of an essential public works project can be subverted by good intentions and bad judgment.

"This is absolutely a case study in how not to build any big plant," said Albert F. Appleton, commissioner of the city Department of Environmental Protection, who called North River's problems "the cost for decades of making political decisions when good scientific decisions were really required."

"Every compromise that was made to build this plant has come back to haunt the city and its residents," he said. "It will cost far more to fix them than it would have to do it right in the first place."

The plant has been bitterly contested since it was approved in the early 1960's, and the biggest structural flaws -- the roof and a series of unusually deep tanks to collect sewage -- were added to mollify residents opposed to its location in West Harlem.

The roof, which hovers above an enormous and architecturally impressive series of open arches, supports the 28-acre park being built as a concession to the community, and the tanks were doubled in depth to keep the plant from taking more territory along the shoreline.

Like most plants of its kind, North River was supposed to be fully enclosed. But before the plant could open in 1986, the fiscal problems of the 1970's forced city officials to compromise on that.

It will take at least three to five years to complete renovations, city environmental officials said.

North River processes the sewage produced by the western half of Manhattan from Bank Street to the tip of the island, a 5,100-acre area with more than 600,000 residents. The plant was to have been located near the boat basin at 79th Street, but political opposition on the Upper West Side ended any chance of a plant being built there, and it was moved to the heavily minority neighborhood in West Harlem.

"This plant has become one of the shining symbols of environmental injustice in this city and in the nation," said Peggy Shepard, the Democratic party district leader in the neighborhood and a founder of West Harlem Environmental Action. "They dumped it on us." Summer Increases Smells

Even on a cool, crisp day the smells blowing across the West Side Highway and into the neighborhood can be noxious. On the hottest summer days, residents say that even air-conditioning 20 blocks away does nothing to dissipate the smells.

There have been almost as many theories about the cause of the plant's problems as there have been complaints about its odors. At first, city officials said the odor problems would go away when the plant was completed. Then they said the odors may have been due to open sewers nearby. Finally, engineers speculated the smells were related to the transfer of sludge, the solid end product of sewage treatment, to barges on the Hudson River. None of those answers proved true.

The plant also has serious trouble with its aeration tanks, where sewage is subjected to the oxygen and bacteria necessary to digest it. The tanks were built 29.5 feet deep, twice the depth of those at most of the city's other 13 sewage treatment plants and the deepest in the United States.

Controlling the amount of oxygen in the tanks is tricky. With too much, solids float to the top, which dramatically increases the stench. Without enough oxygen the sewage will become septic, and that creates far worse smells.

The expensive solution has been to use computers to monitor the extremely small margin of error required to keep the waste filled with the right amount of oxygen.

"Every decision seemed to be a compromise and many of them made some sense," said Stanley E. Michaels, the chairman of the Environmental Committee of the City Council. "But you can see where it got us." A Park Is Waiting

Repairing the plant will require covering up dozens of major spots that are now open.

In addition, engineers will have to remove the stale, fetid air, as required by Federal law. The plant already has an elaborate air pollution system, but the changes will make a new system necessary.

That will cost millions of dollars and it will be tricky to construct, because space on the platform is not easy to find. If the city does not take such measures however, the state park -- with two pools, a wading pond, an outdoor running track, a skating rink and cultural centers set into a commanding esplanade with a perfect view of the river -- could be placed in jeopardy. The park is scheduled to open next spring.

"Do you know what is over this area?" asked Alfonso R. Lopez, the deputy director for operating the sewage treatment plants and pump stations, as he conducted a recent tour of North River. He was standing at one of the plant's most noxious points, in the northwest corner.

"The restaurant," he said gravely. "Now, on the wrong day the right puff of wind is going to make that restaurant one of the least-inviting places in the city."

Mr. Lopez said that the city would enclose many of the tanks, fans and other possible sources of odors in that area. He said he was convinced that on all but "three or four days a year" the worst problems would be solved.

But community residents and environmental advocates are less certain.

"Previous administrations said there wasn't even a problem there," said Eric A. Goldstein, a senior attorney for the Natural Resources Defense Council and an expert on sewage problems in New York.

"We are now where they seem willing to make amends. I hope they do. But I also hope they learn from the process that the shortcut is often a long way. Everybody lost here, and we don't need any more of that."