

Jetting Under D.C.

EQUIPMENT MODIFICATIONS ENABLE A CONTRACTOR TO CLEAN A GRAVITY LINE 40 FEET BELOW A WASTEWATER TREATMENT PLANT IN WASHINGTON, D.C.

BY SCOTTIE DAYTON

A 24-inch gravity line designed to transfer sludge from one pit to another at the Blue Plains Advanced Wastewater Treatment Plant in Washington, D.C., was one-half to three-quarters full and hadn't been used in years. As part of a plant upgrade, project engineer Nicholas Ritenour, P.E., of Ulliman Schutte Construction in Washington, wanted it cleaned.

The pipe, running 800 feet in a service tunnel 40 feet beneath the plant, hung eight to 14 feet above the floor. Three contractors said the situation was impossible before Ritenour called Tom Buchwald of Quality Pipe Cleaning Co. in Centreville, Va. Buchwald has more than 20 years of experience resolving the unsolvable.

"Our biggest challenges were mobilizing equipment, getting a jetter hose in the pipe, and cleanup," he says. "Since air had never reached the sludge, it was soft, but not soft enough to flow."

Buchwald's answer involved bolting the hose reel and controls from a Vac-Con X-Cavator to the front of a 753 Bobcat loader and staging two hydro-excavators near a service stairwell. Despite unforeseen obstacles, eight employees working 10-hour shifts cleaned the line in 10 days.

MOBILIZATION

The crew spent the first day mobilizing equipment. The tunnel had adequate ventilation to run the loader and alarms were in place in the event the carbon monoxide level rose too high.

"Once cleaning began, we could see smoke in the air, but it never became an issue," says Buchwald. Lighting also was adequate.

Project manager J.R. Swerda drove the loader down a ramp and into the west end of the tunnel where work would begin, but the passage narrowed and blocked the attempt. He reversed and consulted Ritenour.

A pump house on the east side of the plant had a 50-ton overhead crane that changed out pumps through an access hole large enough for the loader. Swerda and the crane operator hooked chains to the hose reel before unbolting and lowering it. Halfway down, it flipped over on its side, so the crew hoisted it back up, righted the unit, reattached the chains, and lowered it successfully.

"Lowering the Bobcat was hairy because it's old and doesn't have lift points," says Swerda. "We made a sling from two chains and balanced the machine between them."

To clean the pipe 8 feet overhead, Tom Buchwald bolted the hose reel and controls from a Vac-Con X-Cavator to the front of a 753 Bobcat loader. The 2-inch water supply hose is attached to the left, while the 2-inch jetting hose snakes forward and upward. (Courtesy of Quality Pipe Cleaning Co.)

When it was on the floor, Swerda reattached the hose reel and drove to the work area.

Buchwald planned to hook the 2010 Vac-Con to a fire hydrant to supply water to the 2011 machine stationed at the east stairwell. When they arrived, masons were building a wall at that entrance.

tough job

PROJECT: Clean 800 feet of 24-inch pipe 40 feet below ground

CUSTOMER: Blue Plains Advanced Wastewater Treatment Plant, Washington, D.C.

CONTRACTOR: Quality Pipe Cleaning Co., Centreville, Va.

EQUIPMENT: X-Cavators from Vac-Con
888/491-5762
www.vac-con.com

RESULTS: Line cleaned in 10 days



(continued)



ABOVE: Built from two rows of sandbags, the 15- by 15-foot capture pit was 18 inches high and leaked badly. The camera captured flying spray. RIGHT: A rope tied through the bolt holes in the pipe secures the jetter hose, preventing it from falling out. Plant operators used the hanging chains to lower the valve they cut out of the line.



“We had to park the trucks hood to hood at the west stairwell 60 feet away, which made it even farther for the machine to pull,” he says.

STAIR MASTERS

The crew hauled 200 feet of 6-inch flexible hose down six flights of stairs, then brought 60 feet of 8-inch hose for vacuuming and the 1/2-inch hose supplying water to the jetter. To access the pipe eight feet overhead, plant operators had removed valves at two locations. Swerda’s crew tied a rope through the bolt holes in the pipe to the rear to secure the jetter hose and prevent it from falling out.

The floor was covered with dried sludge. Gutters full of water ran on either side of the tunnel to sump pumps.

“If the sludge we removed reached the pumps, it would burn them up,” says Swerda.

To capture the debris, the men built a 15- by 15-foot pit 18 inches high from two rows of sandbags.

“The first couple of times we jetted a section was really nasty,” says Swerda. “The slurry blew out, hit the ground, and splattered all over the walls and floor.”

The first 300-foot section had the worst buildup and took two days to clean using a Vac-Con Storm nozzle with six jets in the rear.

“We probably jetted it 50 to 60 times,” says Swerda.

At the farthest point, the crew vacuumed 250 feet from the trucks, both VPD4012/1300 LXA units with 12-cubic-yard debris body, 1,300-gallon water



The pump house, the last building in the background, is 800 feet from where the trucks are mobilized.

tank, 4,000 cfm/18 inches Hg Hibon positive displacement blower, and 80 gpm/2,000 psi water jetter with Omnibus Control System. They discharged material at the plant.

Workers initially laid the vacuum hose flat in the pit, but suction was reduced when the hose wasn’t fully covered, and by then they had containment problems. Swerda found a 6-foot stepladder, slung the hose across the spreaders, and pointed the end into the pit to improve suction.

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J.R. Swerda

HORRIBLE MESS

The pit leaked badly. Workers corralled the overflow and pushed it back to the hose with squeegees. When they thought the section was clean, Swerda televised the line with an OZ II camera on a wheeled Pipe Ranger from CUES.

“The inspection truck has 900 feet of cable and we strung out most of it,” he says. “I was surprised the transporter had the power to pull 600 feet of cable, but it did.”

The second 300-foot section was accessible from the fifth flight of stairs. The work remained identical until the pipe disappeared.

“Nicholas took me down two flights of stairs and there it was, 15 feet off the ground and mostly hidden behind a bunch of other pipes,” says Swerda. “There were only a few places where we could access it.”

A worker in a fall restraint harness walked along two pipes to cut the opening and insert the jetter, fed from the truck now parked beside the service door. As a precaution, plant operators poly-wrapped three pumps in the splash zone. They also assured Swerda that two nearby fluorescent lights were waterproof. When one filled with slurry, it didn’t short out.

Once Swerda verified the line was clean, the crew used a handgun to hose down the walls, floor and overhead pipes at each work area, and brooms to push the material to the vacuum hose. The work took half a day, then operators reinstated the valves to prepare the line for service. **C**