

Solving a Sewage Leak

Municipalities are understanding that they can take on large bypass products.

In early April of this year, Newport, RI, officials were notified that there was a sewage leak at the Long Wharf Sewage Pumping Station. United Water, contractor for Newport's Water Pollution Control Facility, identified a failure in a 36-in. pre-stressed concrete cylinder pipe (PCCP) force main exiting the station. The 9,700-ft Long Wharf sewer main cuts through the heart of the city's tourist district, receiving and pumping wastewater from the southern part of the city and from Middletown and the U.S. Navy Base at Newport.

"We had an emergency break in our force main right in downtown Newport on Long Wharf, which was something we hadn't planned for, so we needed emergency response to fix the leak," said Ed Lavallee, city manager for Newport. "And in our case, since our economy is so dependent upon tourism, this of

course happened right in the center of our central business district. Timing was really critical."

United Water called upon Bristol, RI-based C. B. Utility/C. Brito Construction, which responded to similar main failures in Barrington, RI, in both 2003 and 2006.

"It was a holiday weekend, but from the time they called until we had personnel onsite was no more than 45 minutes. We began analyzing what we thought their problem was. We collaborated with their engineers and our people to come up with an immediate response plan," said C. B. Utility/C. Brito Construction owner, Joe Brito.

"There are no valve shut offs between Long Wharf Pump Station and the wastewater treatment plant at least two miles away. It became apparent that we needed a bypass of over 9,000 feet just to restore the sewage flow and mitigate

any flow out into the bay," said Lavallee.

Laying the Groundwork

Brito and his team sub-contracted with the Norwich, CT-based office of Godwin Pumps (www.godwinpumps.com) to deliver 33,000 ft of 18-in. HDPE pipe, nine 18-in. Godwin Road Ramp road crossings, and 4,000 ft of 12-in. HDPE pipe to begin laying the groundwork for the bypass.

"Godwin Pumps delivered 14,000 feet of pipe within 24 hours to our lay-down area. The following day, Godwin delivered the balance of the pipe to build a 37,000 foot system to pick up the station at Long Wharf to the treatment plant up on Connell Highway. In a six-day period, we built approximately 37,000 feet of bypass, picking up three pump stations with approximately 12 to 14 large pumps from Godwin in sizes anywhere from a small Volkswagen to the size of small dump trucks," said Brito.

In addition, Godwin supplied four 12-in. Dri-Prime® model CD300M pumps in critically silenced enclosures, six eight-in. Dri-Prime model CD225M pumps in critically silenced enclosures, one six-in. Dri-Prime model CD150M pump in a critically silenced enclosure, one four-in. Dri-Prime model CD100M pump in a critically silenced enclosure, one 26kW Godwin Power portable diesel generator, and one eight-horsepower Godwin Sub-Prime model GSL80 electric submersible sludge pump.

Brito's plan called for three 18-in.

Timing of the repair was critical because the Long Wharf Sewage Pumping Station is right in the center of Newport's central business district, and the economy is largely dependent upon tourism.



HDPE bypass pipes stretching from the Long Wharf Sewage Pumping station directly to the treatment facility using an above-ground bypass route that minimally impacted tourist walkways and then used the railroad right-of-way.

"The railroad right-of-way is a dedicated piece of real estate that runs basically from downtown Newport right to the sewage treatment plant. So it seemed to be the logical place for the pipes to go. The difficulty is that with the railroad tracks, you can't put the type of equipment and heavy machinery out there that you would normally use," said Jonathan Babbitt, Superintendent of Railroad Operations for Newport Secondary Rail Lines and the Newport Dinner Train.

C. B. Utility/C. Brito Construction, in conjunction with Godwin Pumps, established a plan to fuse the pipe together in 1,300-ft lengths that were then hauled by train all the way out to the sewer plant.

"We had a threat of untreated sewage going into the bay, the longer that went on, the greater the risk for contamination of the bay, the greater the violation for us, and the greater the hazard for the city," said Lavallee.

Realizing that time was of the essence, a compliment of 24 to 30 people from C. B. Utility/C. Brito Construction and Godwin Pumps worked two 12-hour shifts, 24 hours per day to fuse the pipe together and get the pumping stations online. This included a bypass at the Long Wharf Pumping Station, another bypass at the Washington Street CFO facility, a Dyre Street Pumping Station bypass, and a Navy Training Station Pumping Station Bypass.

"To have this system fused and up and running within a seven day window working 12 hour shifts, 24-hour days with a compliment of probably 24 to 30 people was pretty huge. But, we were able to measure up to the task cooperatively and jointly with Godwin," said Brito.

Numerous Godwin Dri-Prime pumps in critically silenced enclosures were part of the repair, which also included 24 to 30 people working two 12-hour shifts 24 hours per day to fuse the pipe together and get the pumping stations online.

While Brito's teams worked with Godwin to ensure the continued flow and treatment of wastewater away from the bay and towards the treatment facility, city engineers were afforded the time to assess the entire state of the force main and make repair recommendations.

Reliable Backup Solution

"The portability and capabilities of our automatic self-priming pumps marked the advent of municipalities understanding that they could take on very large bypasses. In years gone by, the only option was to shut off, dig, and replace. The fact that the infrastructure and the pipes are aged has brought on the need for these types of services. They deteriorate, bringing the potential for environmental liability. Our portable bypass pumps and engineering capabilities provide a reliable backup solution while municipalities make informed, best practice decisions that will mitigate future failures," said

Godwin Pumps president, John Paz.

With a significant period of installation ranging from 1975 to 1978, Newport director of utilities Julia Forgue acknowledged that manufacturing changes to PCCP pipe during that timeframe resulted in

an increasing number of failures to what would otherwise be considered relatively "young" pipe. In addition, the influx of tidal saltwater coupled with a build-up of hydrogen sulfide resulting from the permanent closure of air release vents resulted in further deterioration of the concrete that encircles the steel cylinder of the pipe.

City officials decided to use a phased approach, including pipe slip-lining—a process whereby 30-in. fused pipe is pulled through the existing 36-in. pipe with grout placed between the two—and dig and replace to repair and remove the damaged PCCP. C. B. Utility/C. Brito Construction was awarded this work in July, with work commencing in August. By October 30, the connection to the pump station was restored and the new force main was operational.

"Public reaction, unanimously, has been extraordinary applause for the quick response," said Lavallee. GE

