

Emergency response saves City of Lévis' water supply

Last year disaster struck the Canadian city of Lac-Mégantic when a train carrying light crude oil derailed in the town center. The resulting explosion and fire destroyed forty buildings and killed 47 people. As thousands of gallons of petroleum spilled into the Chaudière River, Xylem was called in to arrange an emergency bypass for an alternative drinking water source.

The accident occurred shortly after midnight on Saturday July 6, 2013, and sent an explosion with a one-kilometer blast radius through the town center. The explosion and fires destroyed half of the town center and approximately 2,000 people had to be evacuated. The 72-car freight train had also rolled over and began leaking crude oil into the lakes and rivers surrounding the municipality. The petroleum floating on the surface of the river thus flowed with the current towards the only water intake for the town of Lévis that supplies the Charny/Saint-Romuald area.

About 200 kilometers downstream from the accident, the City of Lévis - with a population of 142,000 people - knew they had to act quickly to find a new drinking water source before the polluted water reached them. The town had no more than 36-48 hours to find a solution before the entire drinking water system was contaminated.

The challenge: Lac-Mégantic derailment

Early on Sunday, July 7, the City of Lévis mobilized the city's Civil Security Organization to plan an alternate raw water source to feed their drinking water station in Charny which serves a large area of the Chutes-de-la-Chaudière East borough and the entire Chutes-de-la-Chaudière West borough.

At 4:30 p.m. Yves Rousseau, Infrastructure Technician from the City of Lévis, placed the emergency service call to Xylem and was put in touch with the mechanic on duty. A few phone calls later, Xylem's Quebec City dewatering force in collaboration with Xylem's Montreal office, had made plans for one of its largest water bypasses ever.



“Seventy-two hours after beginning the operation to pump water from the temporary source, the city's water reserves were back to an acceptable level.”

Racing against the clock

The plan was to draw water from the nearby Beaurivage River. Around 6 p.m. on Sunday, transport trucks arrived on site with 1.8 km of rigid 12-inch pipes. Xylem's Montreal office helped with the delivery of the pipes, pumps and other accessories and gave crucial advice about using several 12-inch diesel pumps in series. Additional equipment was sent at 12:30 a.m. on Monday, July 8, 2013.

Xylem provided manpower to install and start this colossal pumping project. The city's drinking water supply was available until 7 p.m. on Monday, at which time the city would close the water network for people in the affected boroughs. Four Xylem installation engineers from Trois-Rivières and three mechanics from Xylem's Quebec office were called and worked on the site for 32 consecutive hours for the project to be up and running within the time limit.

Trees were cleared and trucks delivered stones to construct a road in order to bring the two Flygt BS2250 pumps and their generators on site. The submersible pumps were installed in the river at a depth of eight feet to work as starter pumps for the water network.

Three 12-inch diesel pumps delivered by Xylem were installed in series with a distance of 1,800 feet from each other and provided a flow of 265 liters/second, just over the minimum of 250 liters/second required.

City officials visited the site on many occasions throughout the installation and were able to gauge the progress and the collaboration between the workers from the city and Xylem's employees.

Twenty-five minutes before the shutdown of the drinking water network, Xylem managed to complete the temporary water network and started the system at 7:25 p.m. on Monday, July 8, 2013. Seventy-two hours after beginning the operation to pump water from the temporary source, the city's water reserves were back to an acceptable level.



One of the three 12-inch diesel pumps.

Project Timeline

Saturday, July 6, 2013

1:15 a.m. The train carrying 7.2 million liters of light crude oil derails in Lac Mégantic.

Sunday, July 7, 2013

2:30 p.m. Yves Rousseau from City of Lévis calls Xylem's service center.

4:30 p.m. Service call was made for on-call mechanics to begin gathering the needed equipment.

5:30 p.m. Trucking logistics assessed and organized with additional technical support provided from the Montreal office to plan equipment and make calculations.

6:00 p.m. Search for an installation team in the city of Three Rivers (Trois-Rivières).

6:10 p.m. Approximately 2 km of 12-inch quick-fitting rigid piping starts to be loaded.

6:30 p.m. A call-out for additional teams to support the initial onsite team is made.

8:30 p.m. The first four flatbeds leave for the pumping site. At the site, a wooded area was cleared to provide access to the river and a temporary road was put in place.

11:30 p.m. The team of mechanics and installation engineers head to the site.

Monday, July 8, 2013

00:00 a.m. Piping work and installation of diesel pumps begins.

00:30 a.m. Flatbeds with equipment leave from Montreal.

5:30 a.m. Equipment arrives at the project site.

10:30 a.m. Installation of the Flygt BS2250 submersible pumps in the river.

19:00 p.m. Submersible pumping begins followed by the start of the diesel pumps.

19:25 p.m. Water reaches the water treatment station.

21:00 p.m. The team meets and decides to adjust the piping, pumping is suspended.

23:30 p.m. Piping is optimized and the submersible pumps and diesels are restarted.

Tuesday, July 9, 2013

00:00 a.m. Water reaches the water treatment station.

1:00 a.m. Work completed.

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