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Fall Foliage

Cannonsville Reservoir - New York City Water Supply System

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CONTACT:

Michael Saucier / Mercedes Padilla (718) 595-6600

Preparation Underway to Fix Leak in Delaware Aqueduct

Progress towards goal set in PlaNYC

The New York City Department of Environmental Protection (DEP) announced today that it has successfully completed an important step in the eventual repair of the 45-mile Rondout-West Branch Tunnel, which has been leaking for nearly two decades. For approximately two weeks - beginning February 20th - a team of divers, working 24 hours a day in rotating shifts, were lowered 700 feet in order to inspect mechanical and structural components of a tunnel unwatering shaft and to take measurements for new equipment. The Rondout-West Branch (RWB) Tunnel is part of the Delaware Aqueduct, which, at 85 miles, is the world's longest continuous tunnel, and a vital component of the City's drinking water supply system. The investigations provided DEP with extensive data and critical measurements, and will ultimately inform the development of a comprehensive repair program for the Delaware Aqueduct.

"The Bloomberg Administration has made planning for the repair of the Delaware Aqueduct a pivotal part of the PlaNYC goal to improve the reliability and long-term sustainability of New York City's water infrastructure," said Commissioner Lloyd. "DEP has closely monitored the Aqueduct since its construction, which allowed us to discover the leaks in the late 1980s. Since then, DEP has continuously monitored, studied and tested the leaks and their effects, using dye tests, backflow tests, hydrostatic tests, and hourly flow monitoring. This dive was an important step in developing a repair strategy for the tunnel and preparing to undertake this work."

The Delaware water supply system, constructed between 1937 and 1965, originates more than 100 miles north of New York City and consists of four reservoirs: Cannonsville, Neversink, Pepacton, and Rondout. The Delaware Aqueduct conveys drinking water from these reservoirs to the City's distribution system, and currently provides approximately 50 percent of the City's daily water needs. The Aqueduct is a 13.5-foot diameter, concrete-lined tunnel that varies in depth from 300 to 1500 feet beneath the ground and

MORE INFORMATION

NYC Department of Environmental Protection
Communications & Intergovernmental Affairs

59-17 Junction Boulevard
19th Floor
Flushing, NY 11373

(718) 595 - 6600

[Construction, Demolition & Abatement](#)

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crosses the Hudson River at nearly 600 feet beneath the ground. The Rondout-West Branch (RWB) Tunnel is a 45-mile portion of the 85-mile Aqueduct, and connects the Roundout Reservoir in the Delaware system to the West Branch Reservoir, located in Putnam County, in the City's Croton watershed.

Since the late 1980s, DEP has been monitoring two leaks in the RWB Tunnel portion of the Aqueduct that collectively release between 10 and 36 million gallons of water a day (mgd), depending on the amount of water the Aqueduct is carrying. Monitoring has shown that the leakage rate is stable and has not grown.

Seattle-based Global Diving performed the inspection work as a subcontractor to Rondout Constructors. Global Diving utilized a Saturation Dive System to perform this deep water work - meaning the divers live 24 hours a day in a sealed, pressurized environment. The Earth's surface atmosphere is approximately 78% Nitrogen and 21% Oxygen, but because of the immense pressure at 700 feet beneath the surface of the shaft (nearly 300 pounds per square inch), the divers were required to live in an environment composed of 97% helium and 3% oxygen for the duration of the work - approximately three weeks. Even when they were not underwater, the divers lived in a specially-designed, pressurized chamber, outfitted with sleeping accommodations. The divers remained under pressure while they moved from the saturation chamber to their diving bell, which was lowered to the bottom of the shaft so the divers could exit and perform their work. The underwater work was observed and monitored using closed circuit cameras and audio attached to the diver's helmets and the diving bell. Though their work is complete, the diving team will remain in the confinement of the saturation chamber for an additional seven days so they can gradually and safely return to standard atmospheric pressure.

In addition to beginning the work at the unwatering shaft and designing the long-term repair program, DEP has also developed an emergency repair plan, and through its Dependability Study is developing plans to diversify the City's water system. In addition to creating redundancy for our aqueducts, PlaNYC provides for the stewardship of the City's entire water supply and distribution system by modernizing the in-city distribution network (completing Tunnel 3), protecting drinking water at the source -- through rigorous watershed protection programs -- and building the Croton Filtration Plant.

New York City's water supply system provides 1.2 billion gallons of water daily to approximately nine million people in New York City, as well as a number of communities in Orange, Putnam, Ulster, and Westchester counties. Water for this system is derived primarily from three reservoir systems known as the Croton, Catskill, and Delaware systems, which are operated and maintained by the New York City Department of Environmental Protection (DEP).