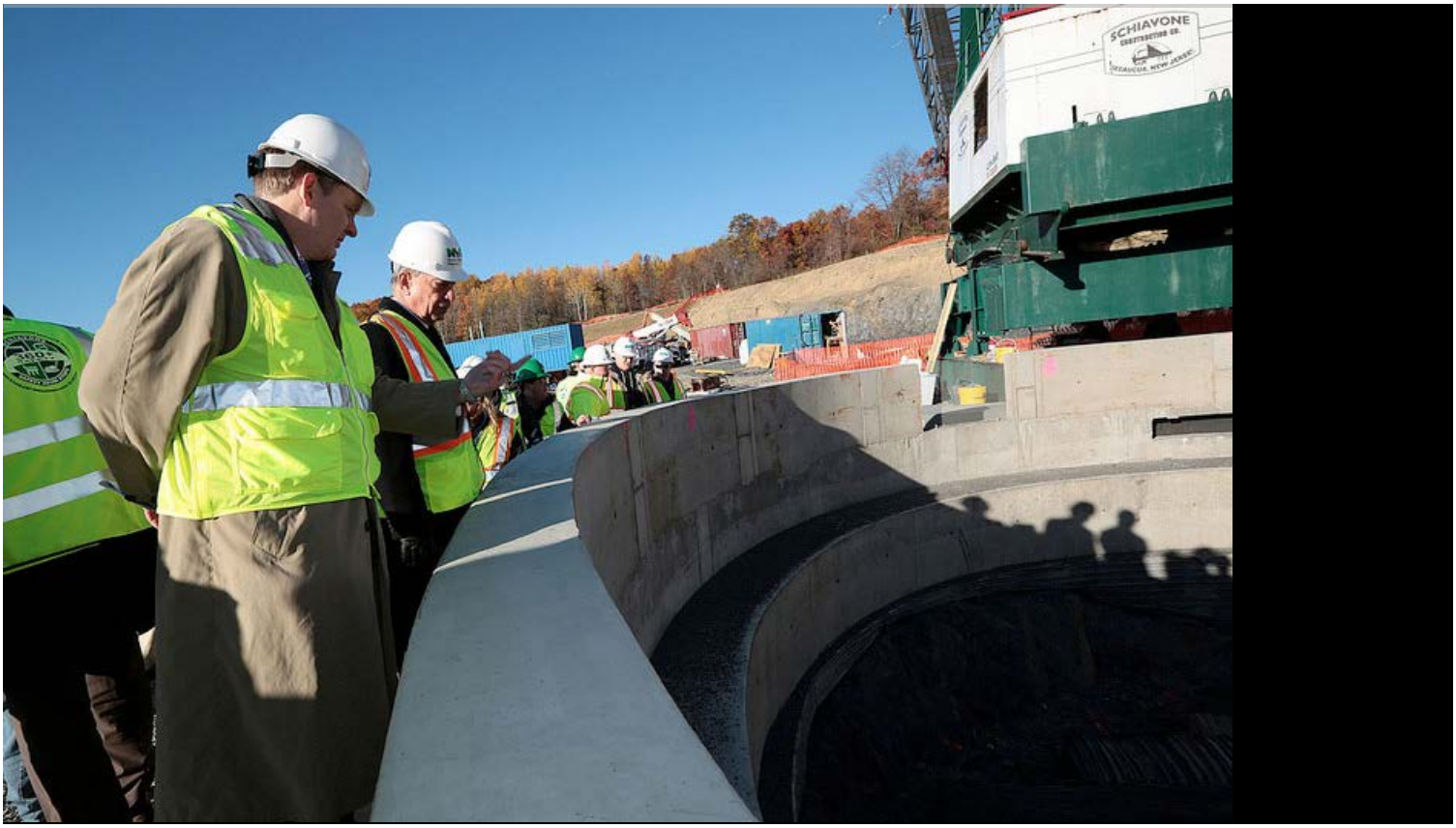

Mayor Bloomberg, Deputy Mayor Holloway and

Environmental Protection Commissioner Strickland Visit Upstate Construction Site as Critical Repairs to the Delaware Aqueduct Begin

November 4, 2013

Upstate Aqueduct Carries Half of City's Water Supply and Repairs are Central Component of $1.5 Billion Water for the Future Program to Improve Water Supply Infrastructure and Promote Conservation Efforts in the City

Project is the Administration's Latest Major Investment in the City's Water Supply

High Resolution Images of the Project are Available on the Mayor's Office Flickr Page: http://www.flickr.com/photos/nycmayorsoffice

Mayor Michael R. Bloomberg, Deputy Mayor for Operations Cas Holloway and Department of Environmental Protection Commissioner Carter Strickland today visited a construction site in Newburgh, New York where work has begun on a project to build a 2.5-mile-long bypass tunnel approximately 600 feet below ground, around a leaking portion of the Delaware Aqueduct. The Delaware Aqueduct conveys more than half of New York City's high-quality drinking water every day from reservoirs in the Catskill Mountains and repairing it is the central component of the $1.5 billion Water for the Future program, which aims to ensure clean, safe and reliable drinking water for future generations of New Yorkers. Water for the Future also includes improvements to the structural integrity and carrying capacity of the Catskill Aqueduct, rehabilitation of the Queens Groundwater System to supplement upstate water supplies, and water conservation initiatives in the city. The repair of the Delaware Aqueduct is an important part of PlaNYC's goal to improve the reliability and long-term sustainability of New York City's drinking water supply infrastructure. Since 2002, New York City has invested more than $20 billion in water quality projects – the largest commitment to water supply and wastewater infrastructure made by any United States city.

"Repairing the Delaware Aqueduct is critical to providing high-quality drinking water to more than 9 million New York State residents – including 8.4 million in New York City – now and for future generations," said Mayor Bloomberg. "Building the Delaware Aqueduct bypass is part of more than $20 billion of water infrastructure investments we have made since 2002 – more than any other City in the nation."

"Like the portion of City Water Tunnel number 3 we activated last month, repairing the Delaware

Aqueduct is a long-term project that is essential to New York City's continued growth and prosperity," said Deputy Mayor Holloway. "This project is possible because of the hard work and dedication of the women and men of the Department of Environmental Protection, the contractors who will execute our plans, and New York City taxpayers, who pay for these essential investments."

"The Delaware Aqueduct is a primary artery in our water delivery system and engineers have dedicated many years to locating the leaking portions of the tunnel and designing a cost-effective solution," said DEP Commissioner Carter Strickland. "As we begin construction we are also identifying additional sources of water, augmenting existing water conduits, and implementing conservation measures in the city to make certain that there is a reliable supply of water during the critical phases of the repairs. This complex, multi-faceted project will ensure that DEP can continue to deliver the highest quality water to more than nine million New Yorkers for generations to come."

"DEP's in-house design team has a proud tradition of designing the rock tunnels and shafts that supply drinking water to more than nine million New Yorkers every day," said Deputy Commissioner Kathryn Mallon. "Working in partnership with an incredible construction team and contractor, DEP is ahead of schedule and under budget on this critical project – a true testament to the talent of our staff."

The Delaware water supply system originates more than 120 miles north of New York City and comprises four reservoirs: Cannonsville, Neversink, Pepacton and Rondout. The 85-mile long Delaware Aqueduct conveys drinking water from these reservoirs to the City's distribution system, which originates at Hillview Reservoir in Yonkers. On average, the Delaware Aqueduct provides more than half of the approximately 1 billion gallons of clean drinking water required to meet the City's demands every day. The aqueduct, the world's longest continuous tunnel, was constructed between 1939 and 1944 and crosses Ulster, Orange, Dutchess, Putnam and Westchester counties. The aqueduct runs as deep as 1,500 feet below ground, varies in diameter from 13.5 to 19.5 feet, and was constructed by drilling and blasting.

In most areas, the Delaware Aqueduct is lined only with reinforced concrete. However, two sections of the tunnel that run through limestone formations were lined with steel because limestone is more likely to cause wear and tear on the lining of the aqueduct. The ongoing investigation of the structural integrity of the aqueduct has found that small cracks formed where this steel lining ended.

DEP has monitored the two portions of the aqueduct with leaks – one in the Orange County town of Newburgh, and the other in the Ulster County town of Wawarsing – since the 1990s. The leaks release 15 to 35 million gallons of water a day, depending on the amount of water the aqueduct is carrying. DEP has continuously tested and monitored the leaks by using dye, backflow, and hydrostatic tests, and hourly flow monitors provide near real-time data on the location and volume of the leaks. In 2003 and 2009, DEP used an Autonomous Underwater Vehicle (AUV) – a cutting-edge, self-propelled submarine-shaped vehicle built in partnership with engineers at Woods Hole Oceanographic Institution in Massachusetts – to

conduct a detailed survey of the entire 45-mile length of tunnel between Rondout Reservoir and West Branch Reservoir. The AUV took 360-degree photographs while gathering sonar, velocity, and pressure data to assist in determining the location, size and characteristics of the leaks. The AUV is scheduled to launch again in 2014 to update that data. All the data gathered thus far clearly show that the rate of water leaking from the tunnel has remained constant and the cracks have not worsened since DEP began monitoring them in 1992.

Repairing Leaks in the Delaware Aqueduct

In 2010, the City announced a plan to address the leaks by building a bypass tunnel around the portion of the aqueduct in Newburgh with significant leaks, and also grouting closed the smaller leaks in Wawarsing. Site work for this complex project began in January and construction is expected to continue through the year 2021.

The project will begin with the excavation of two vertical shafts that will provide access for construction workers to dig the bypass tunnel. The shafts in Newburgh, on the west side of the Hudson River, and the Dutchess County town of Wappinger, on the east side of the river, will be 900 and 700 feet deep respectively and will measure roughly 30 feet in diameter. Blasting for the shaft in Newburgh began in October, and work on the Wappinger shaft is expected to start by the end of November. Both shafts are expected to be complete by 2016. An underground chamber at the bottom of the Newburgh shaft will serve as the staging area for a tunnel boring machine, which will drill the 22-foot-diameter bypass tunnel, progressing at roughly 50 feet a day. The tunnel will be roughly 14.5 feet in diameter once it is lined with concrete and steel and will stretch 2.5 miles – including beneath the entire width of the Hudson River.

The existing Delaware Aqueduct will stay in service while the bypass tunnel is under construction. Once the bypass tunnel is nearly complete and water supply augmentation and conservation measures are in place, the existing tunnel will be taken out of service and excavation will begin to connect the bypass tunnel to structurally sound portions of the existing aqueduct. This work is anticipated to happen late in the year 2021. Engineers expect it will take roughly eight to 10 months to connect the bypass tunnel. While the Delaware Aqueduct is shut down, work crews will also fix cracks at three segments in Wawarsing, roughly 35 miles northwest of the bypass tunnel. These segments, totaling roughly 500 feet, will be sealed by injecting grout into them.

The project will mark the first time that the Delaware Aqueduct will be drained since 1958. In June, City employees installed new pumps inside a shaft at the lowest point of the Delaware Aqueduct to eventually dewater the tunnel. Those pumps will be tested several times before the tunnel is drained in 2021. The nine pumps are capable of removing a maximum of 80 million gallons of water a day from the tunnel – more than quadruple the capacity of the pumps they replaced from the 1940s. The largest of the pumps are three vertical turbine pumps that each measure 23 feet tall and weigh 9 tons.

The bypass tunnel project is expected to create nearly 200 jobs over the next eight years. In 2012, DEP signed a project labor agreement (PLA) with the Hudson Valley Building and Construction Trade Council that ensured the vast majority of those jobs would be filled by local workers. Also, the PLA is expected to save the City up to $23 million over the life of the project. With 18 different local labor agreements that could potentially apply to the project, the PLA provides for a unified approach to shifts and time off, and the increased coordination under one agreement allows for more cost-effective scheduling and increased flexibility.

Ensuring Reliable Water Supply During Construction

The Delaware Aqueduct bypass project has required years of preparation and planning the led to the Water for the Future program, a portfolio of related projects that will ensure New York City has high-quality and reliable drinking water while the aqueduct is out of service.

- Catskill Aqueduct Repair and Rehabilitation: The 74-mile-long Catskill Aqueduct, which conveys water from the Ashokan and Schoharie reservoirs, will undergo a repair and rehabilitation project starting in 2016. Along with replacing more than 30 valves that are decades old, the interior lining of the tunnel will be scrubbed to decrease friction, which will increase the tunnel's capacity by approximately 30-40 million gallons of water each day.
- Queens Groundwater: To augment the City's upstate water supplies, DEP will also rehabilitate the Queens Groundwater System, formerly the Jamaica Water Supply, which will sustainably provide more than 33 million gallons of water a day in southeast Queens. DEP has committed to using proven technologies to ensure these wells produce high-quality water that meets or exceeds all water quality standards. The Queens Groundwater System comprises 68 wells at 48 separate well stations.
- Water Conservation: Between now and the Delaware Aqueduct shutdown in 2021, DEP will implement a number of initiatives to reduce water consumption in the City by 5 percent. As part of the Municipal Water Efficiency Program, DEP is identifying opportunities to conserve water at City-owned properties and facilities. Thus far, DEP has partnered with the New York City Department of Parks and Recreation to install activation buttons on spray showers in 400 playgrounds around the city that will save 1.5 million gallons of water a day. DEP has also begun updating bathroom fixtures in 500 city schools that will save an additional 4 million gallons of water each day. To help encourage water conservation in private residences, later this year DEP will begin a voucher program that aims to replace up to 800,000 inefficient toilets with high efficiency models that will save up to 30 million gallons of water a day by 2018. The City is also working with private businesses to reduce demand for water and, over the summer, announced that 11 premier hotels have agreed to cut their water use by 5 percent, saving roughly 13 million gallons annually.
- Croton System: The Croton Water Filtration Plant is entering its final stage of construction in the north Bronx, and testing of the filtration system and water lines has already begun. Once online, the filtration plant will allow the City to once again use water from the reservoirs in Putnam and Westchester counties that comprise the Croton System. DEP expects this will provide nearly 300 million gallons of high-quality water each day.

Updates on construction, milestones and other information related to Water for the Future will be posted

here. The website includes a clear explanation of the projects, a timeline, and information about how the program will improve and secure the delivery of clean drinking water to 8.4 million residents of New York City and roughly a million additional residents in Orange, Putnam, Ulster and Westchester counties who also use water from the City's supply.

Mayor Bloomberg has made a larger commitment to maintaining and improving the City's water system than any administration in history. Approximately $21 billion has been allocated for water system capital projects, and of that, more than $10 billion has been committed to upgrade the system that supplies and distributes the city's drinking water, including:

- $3.2 billion for the Croton Filtration Plant, which will filter drinking water from the Croton Watershed;
- $2.7 billion invested and committed to City Water Tunnel No. 3 – more funding for the tunnel than the previous five administrations combined;
- $1.6 billion to replace outdated water mains and pipes in the city, including the installation of more than 470 miles of new pipe;
- $1.5 billion for the world's largest Ultraviolet Disinfection Facility, which will provide an added layer of protection for drinking water from the Catskill and Delaware Watersheds;
- $380 million for the acquisition of approximately 100,000 acres of land upstate to protect the city's watershed – allowing New York City to remain one of only five large cities in the country to obtain the majority of its water from unfiltered sources; and
- $250 million to upgrade City dams in the watersheds.

Another $9.5 billion has been allocated toward projects that better collect and treat the approximately 1.5 billion gallons of wastewater created in New York City every day, which has helped make the harbor cleaner than it has been in more than a century. These projects include:

- $5 billion to upgrade the Newtown Creek Wastewater Treatment Plant;
- $2.2 billion for more than 600 miles of new or reconstructed sewer lines; and
- $1.1 billion to reduce nitrogen emissions from wastewater treatment facilities.

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