Safer and More Resilient: Mayor de Blasio Activates New $250 Million Drinking Water Tunnel Connecting Brooklyn and Staten Island

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New water tunnel can convey up to 150 million gallons per day and ensures Staten Islanders will have reliable supply of high quality drinking water

NEW YORK––Mayor Bill de Blasio today activated a new $250 million water tunnel connecting Brooklyn to Staten Island, ensuring the borough has a safe, reliable drinking water supply in the aftermath of a disaster. The new, deeper tunnel – called a siphon – is a critical back-up that can deliver up to 150 million gallons of safe, clean drinking water per day to Staten Island from Brooklyn under the New York Harbor. Hurricane Sandy's storm surge damaged the project and tunnel in 2012. During an 18-month shutdown for repairs, resiliency measures were put in place to prevent future storm damage and raise key facilities out of the new 100-year floodplain.

The rebuilt water tunnel aligns with the City's comprehensive resiliency and sustainability efforts to ensure we continue to become safer, stronger and better prepared for the next storm. Plans for the upgraded water system were redrawn after Sandy to raise permanent infrastructure, including the chlorination

station, above the new 100-year flood plain. The project was funded jointly by DEP and the Port Authority of New York and New Jersey, and managed by EDC.

Photos of the Tunnel Boring Machine and Construction are Available on DEP's Flickr Page. A Video Taken from Inside the Tunnel is available here.

"Our city is better prepared to tackle 21st century threats like Sandy today than ever before. This water tunnel is one measure that will help Staten Island spring back to action in the event of a disaster that would disrupt the water supply," said **Mayor Bill de Blasio**. "Measures like these are being implemented across the City, from Red Hook to the Rockaways, our City is becoming Safer and more resilient every day. I thank our federal partners, the Department of Environmental Protection and the Economic Development Corporation for helping us complete this essential project."

"In the aftermath of Hurricane Sandy, New York City decided that it must not just prepare for the next Sandy, but has embraced the charge to build a stronger, more resilient city, " said **Daniel Zarrilli, Senior Director of Climate Policy and Programs and Chief Resilience Officer for the NYC Mayor's Office**. "There are fewer more important efforts than ensuring the backup water supply for the city. It is a perfect example of the types of initiatives that we must complete in order to be ready to withstand and emerge stronger from the impacts of climate change and other 21st century threats. We have accomplished a lot in the past four years. And we have much more to do before we'll be satisfied. Inclusive climate actions like these, through our OneNYC program, will strengthen the city as we look to the future and build a more equitable, more sustainable, and more resilient New York."

"This new drinking water supply tunnel represents a $250 million investment in the future of Staten Island," said **DEP Acting Commissioner Vincent Sapienza**. "Ensuring a reliable supply of high quality drinking water includes ensuring our infrastructure is resilient to future storms. I want to thank Mayor de Blasio for his continued support for all of our critical capital investments in the City's water and wastewater systems, as well as our partners at EDC for managing this challenging project."

"NYCEDC is proud to help deliver this $250 million water tunnel, which will bring much needed resiliency to the water supply for people in Staten Island," said **NYCEDC President Maria Torres-Springer**. "Just as importantly, this project will also facilitate the deepening of New York Harbor, allowing larger and more modern cargo ships to access our city and fuel continued economic growth and good middle class jobs."

All of New York City's high-quality drinking water is collected in protected reservoirs located up to 125 miles north of the city. From there it travels south through aqueducts to Hillview Reservoir in Yonkers where it enters City Water Tunnels Nos. 1, 2 and 3. These tunnels are located roughly 500 feet beneath street level and travel through the boroughs of the Bronx, Manhattan, Queens and Brooklyn. Two siphons were built in the bed of New York Harbor to connect Staten Island to Brooklyn, and the City's upstate water supply, in 1917 and 1925 respectively. As Staten Island's population and its demand for water grew, in 1970 the 10-foot diameter Richmond Tunnel was built deep in the bedrock beneath New York harbor and became the primary water conduit to the Island. The original siphons have since been kept in

service as a back-up connection to ensure a reliable supply of drinking water for the nearly 500,000 residents on Staten Island who consume approximately 50 million gallons of water each day.

The new 72-inch siphon was excavated at a depth of 100 feet and replaces the two existing water connections that run from Bay Ridge in Brooklyn to Stapleton and Tompkinsville on Staten Island. These two connections were removed during the Port Authority's harbor deepening project. The new siphon, which successfully completed pressurization and water quality testing earlier this fall, serves as the back-up water feed for Staten Island. If needed, it has the capacity to carry up to 150 million gallons per day.

Work on the project began in August 2011 and included the construction of access shafts in Brooklyn and Staten Island. A 300 foot-long, 110 ton Tunnel Boring Machine (TBM) was lowered into the Staten Island shaft in July 2012 and had progressed approximately 1,600 feet towards Brooklyn when operations were suspended on the evening of October 28, 2012 in advance of the approaching Hurricane Sandy. The historic storm surge associated with Sandy flooded the Staten Island shaft and the excavated tunnel with sea water and severely damaged the TBM. After the tunnel and shafts were dewatered and damage assessments were completed, months of repairs and testing of the TBM followed. On April 14, 2014, the TBM resumed work and excavation of the tunnel was completed in February 2015.

The tunnel and TBM were only susceptible to flooding from a storm surge during construction, while the shafts were open. During the 18-month shutdown, resiliency measures were put into place that allowed crews to cover the shaft sites and close a flood gate to protect them from a potential storm surge during the final stages of construction. In addition, plans were redrawn to raise the permanent infrastructure, including the chlorination station on the Staten Island side of the tunnel, above the new 100-year flood plain.

Construction currently continues on the chlorination station, which will feature a "green roof" and a sustainable "living wall" complete with vegetation that will decrease the impervious footprint of the building. Both the "green roof" and the "living wall" will retain stormwater longer and filter it through vegetation, minimizing stormwater runoff.

The Earth Pressure Balance TBM, which was used for the first time in New York City as it is made specifically for use in soft ground as opposed to bedrock, excavates and simultaneously installs four foot-wide concrete pre-cast segment rings to line the tunnel wall. Prior to Hurricane Sandy, 389 segment rings had been put in place, and in total the TBM installed 2349 rings. While the TBM was building the tunnel, work crews were constantly building tracks that allow trains to transport workers, equipment, and the excavated material to and from the shaft sites.

In addition to building the tunnel, the project includes the installation of water control equipment and other related infrastructure improvements to connect the new tunnel to the existing water distribution networks in both boroughs, including 6,545 feet of new water mains in Staten Island and 1,710 feet of new water mains in Brooklyn. In Staten Island, the new water mains run along Van Duzer Street, Victory Boulevard, Front Street and Murray Hulbert Avenue. In Brooklyn, the improvement to the existing water mains took

place near 79th Street and Shore Road and along Shore Road between 83rd and 86th Streets. The project will also include the restoration of street landscaping, tree protection and a new pavement walkway around Shore Road Park.

"New York City has one of the most sophisticated – and cleanest – water systems in the world, and it's a testament to the Department of Environmental Protection's great work. Thanks to this project, Staten Island will continue to have a safe and resilient water supply," said **Congressman Dan Donovan**.

"Providing clean, safe, and reliable water is one of government's top priorities, and I am glad the Mayor is making good on his promise that Staten Island will not be the forgotten borough when it comes to ensuring the resiliency of our water supply," said **Assembly Member Matthew Titone**.

"Reliable, clean drinking water is one of the basic necessities that government has an obligation to provide. This new project ensures that Staten Islanders will have high quality water at the tap," said **Assembly Member Ron Castorina**.

Council Member Costa Constantinides, Chair of the Committee on Environmental Protection, said, "The new water siphon will help Staten Island residents have a reliably supply of drinking water. With this $250 million capital project in our city's infrastructure, the siphon is now more resilient and able to withstand potential future storms. I thank Mayor de Blasio, DEP Acting Commissioner Vincent Sapienza, and EDC for their commitment to ensuring our drinking water supply remains high-quality."

"This monumental project 100 feet below the harbor is a significant investment in the future of our borough, ensuring a reliable supply of drinking water for all Staten Islanders should it be needed. As we remember the devastation that Hurricane Sandy brought to our shores four years ago, completion of this tunnel is reminder of the meaningful investments we are making to ensure our safety and resiliency in the future. I thank the Mayor, the Department of Environmental Protection, the NYC Economic Development Corporation and the Port Authority for ensuring the completion of this project," said **Council Member Deborah Rose**.

"Hurricane Sandy was not only an unprecedented disaster, it was also a wakeup call on the state of this city's critical infrastructure – as evidenced by the storm's surging floodwaters nearly shutting down the Port Richmond Wastewater Treatment facility. The completion of this water tunnel, along with the ongoing resiliency work at the Port Richmond plant, is essential to maintaining the long-term sustainability of Staten Island's water supply," said **Council Member Steven Matteo**.

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