

Boring Has Never Been So Exciting

Boring—it helped make New York's water supply infrastructure an engineering marvel, which in turn ensured the Big Apple's prominence as a world city. When construction of the Catskill system began more than a century ago, shaft construction and tunneling relied on land surveying, precise engineering specifications, and—yes—geological boring samples.

A boring core is a cylindrical sample of earth strata obtained by drilling a vertical hole that shows soil and rock in areas where shaft and tunnel work will occur. A drill rig bores a small diameter hole to a pre-determined depth from which a set of tests is performed and data gathered from within the borehole. The information gathered provides a basic picture of the ground conditions to be encountered, which in turn, may dictate the design of the



Box containing borings from City Water Tunnel No. 1 (11/12/1909)

tunnel, the selection of equipment, and the approach.


Fast forward 100 years to DEP's Water for the Future (WFF) program and boring technology is still part of the engineer's toolkit. In the last few months, DEP has begun the first of several planned borings to obtain geophysical data for de-

(Continued on reverse side)

Spotlight on Safety

Don't Get Burned

National Burn Awareness Week, observed the first week in February, is designed to focus our attention on the importance of fire prevention and protecting human health. It's a good time to remind employees that, although few burn injuries actually occur at work, there are still work areas such as steam pipes, electrical arc flashes, hot machine components, and chemicals that are the sources for potential burn injuries. In 2011, DEP employees or contractors received several burn injuries, mostly from steam, electric or contact with hot surfaces or substances (tanks, engines, asphalt, water).

National statistics  reveal that each year there are:

- 450,000 burn injuries that require medical attention
- 3,500 deaths from fires and burns


- 45,000 hospitalizations for burn injuries

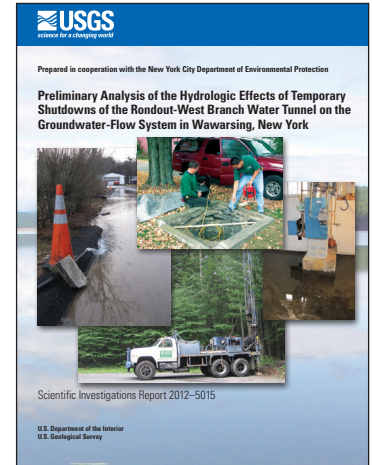
The causes of burns are 44% fire/flame; 33% scald; 9% hot object contact; 4% electrical; 3% chemical; 7% other. The best protection against these types of burn injuries is awareness. Employees should take extra time to become aware of what is around them when working, ensuring that lock-out/tag-out procedures are in place and are followed, observe posted warning and hazard signs, and to make a conscious effort to keep away from the hot components. In situations where the hazard cannot be removed completely, employees must make sure that work tasks are assessed by EHS and they follow safe work practices and wear required personal protective equipment when working in close proximity to high heat or burn hazards.

At DEP, everyone is responsible for safety. If you or anyone on your team is concerned about your working conditions, it's okay to ask your supervisor or your bureau's EHS liaison how they can help. If you've still got questions, you can call the EHS Employee Concerns Hotline. It's DEP's responsibility to acknowledge and fix unsafe situations, procedures, and practices. With your help, we'll not only get the job done, we'll make it safer for ourselves, our coworkers, our families, and our city.

CALL (800) 897-9677 OR SEND A MESSAGE THROUGH PIPELINE. HELP IS ON THE WAY. 

Commissioner's Corner

The Delaware Aqueduct is leaking in two locations, Wawarsing and Roseton. To better understand the impact of the leaks from the 700-foot deep tunnel in the Wawarsing area with the water table near basements, DEP sponsored an independent study by the U.S. Geological Survey (USGS), our nation's groundwater experts. By looking at water levels in several wells—some in bedrock and some in the saturated soil above bedrock called the unconsolidated aquifer—the USGS provides a new layer of detail about how much our tunnel contributes to rising water levels, and how much is due to other factors. You can read the initial findings of the preliminary report here . The report concluded that high precipitation is the greatest factor in localized flooding. In fact, water levels in the unconsolidated aquifer rise between 3.5 to 6.5 feet each year. Our tunnel contributes anywhere from zero to 2.5 feet depending on the well location. Equally as interesting is that the report indicates that residential areas in Wawarsing are less affected than non-populated areas. The areas where our tunnel adds up to 2.5 feet are on Port Ben Road, a non-residential agricultural area. Monitored wells near homes on Route 209 and Smith Road show relatively smaller impacts, anywhere from 1.2 inches to 6.0 inches of additional groundwater. While more wells are currently being monitored for the next stage of the study, this report will help lay out a rational basis for addressing the complaints of the most affected property owners. DEP has committed \$3.7 million for a residential buyout program to match \$3.7 million in state funds, and DEP has also provided \$642,000 in sump pumps, UV units and flood control assistance to the community. Our goal is to address the



impacts of the tunnel and to be a good neighbor.

Wards Island, able to handle up to 275 million gallons per day of dry weather flow, is the second largest of the city's 14 wastewater treatment plants. Built in 1937 as part of a Depression-era stimulus program, it is one of our oldest plants and serves slightly more than one million people in the upper east side of Manhattan, as well as residents of the western half of the Bronx. In addition to wastewater treatment, it houses one of our dewatering facilities, meaning that our sludge boats will dock here and offload treated sludge from plants like Newtown Creek so that it can be prepped for shipment out of the city. Last Friday I stopped by and met with COO **Kathryn Garcia**, BWT Deputy Commissioner **Vinny Sapienza** and Plant Superintendent **John McCabe** to see the nitrogen removal processes that have recently been installed at the plant. The SHARON facility at Wards Island is now fully operational, reducing nitrogen levels in the plant's centrate by almost 90%. Four of the five aeration batteries at the plant have also been upgraded to do biological nitrogen removal, or BNR, with the fifth battery now under construction.

Focus on the Field



Ted Dowey is a crucial part of the Water for the Future program. He is the Bureau of Engineering, Design, and Construction's Chief of Design Services as well as their Design Accountable Manager for the Delaware Aqueduct bypass tunnel. Ted is responsible for managing the in-house design effort for the bypass tunnel contracts, the first of which is for the construction of two shafts, one 700 and the other 900 feet deep. The production of the contract documents is in the

final stage. The shafts must be in place before work can begin on the bypass tunnel.

Ted is no newcomer to DEP. He started at DEP in 1984 and spent more than twenty years working on City Water Tunnel No. 3 before turning his attention to the Delaware Aqueduct bypass tunnel. "Working on City Water Tunnel No. 3 was an exciting experience," Ted said. "Not only was I in the middle of all the action—the blasting, the drilling, the hoisting, the trains running 600 feet underground, but I was also able to work all over the city in different neighborhoods. In the process of working at ten different construction shafts in Manhattan that span nine miles of tunnel, I met with community organizations, community boards, school administrators, and DEP employees from other bureaus."

During his spare time, Ted is an avid photographer and stays active by bicycling and running.

Kudos Corner



GIANT AMOUNT OF FUN: On Monday, DEP held a random lottery drawing to select the winners of eight tickets to the Giants Ticker Tape Parade Ceremony held at City Hall to honor the Super Bowl XLVI Champion New York Giants, and present the team with keys to the City. Commissioner Strickland conducted the drawing himself, and awarded tickets to **Jerry Fragias, Leonel Batista, Rowena Garcia, Jason Serano, Margaret Chambless, Jeremy Walton, Charles Shell, and David Chu**. Congratulations to both the New York Giants and our fellow champs at DEP!

February is **African American Heritage Month (Black History Month)**. The month of February was chosen because it celebrates the birthdays of Abraham Lincoln and Frederick Douglass, both of whom dramatically affected the lives of African Americans. February is set aside to learn, honor, and celebrate the achievements of black men and women throughout history. The theme for 2012 is "Black Women in American Culture and History." Take some time to visit a museum, read an article, a book, watch a film, documentary, or have a conversation to celebrate Black History Month.

StratChat ...with Joseph Anzueta, BWSO, Supervisor Field Operations



100 Strategic Goals Through the Eyes of Our Employees

Initiative 45—Expand catch basin cleanings and rehabilitation to prevent flooding and protect water quality.

THE BENEFITS: "Part of my daily work routine is making sure that all of Manhattan's drainage systems, including catch basins, are properly functioning during both wet and dry weather days. Some areas are more prone to flooding than others but it shouldn't be taken for granted that those may be the only problem areas so if I do come across any issue or failure with any kind of DEP hardware, I make sure that it gets addressed through our repair division to take corrective action. The benefit to the citizens and the city is in being able to travel around the city without having to deal with flooding due to our proactive approach. It makes me feel good knowing I have played a part in people reaching their destinations safely, and that makes me feel good about doing my job and doing it well."

(Boring Has Never Been So Exciting... continued)

sign and construction work for the upcoming repair of the aqueduct and construction of access shafts in the upstate towns of Newburgh and Wappinger. In addition to the bypass tunnel, the plan calls for repair of other areas of the tunnel near Wawarsing from within. As part of the plan, DEP will break ground on the shafts for the bypass tunnel in 2013, and begin the bypass connection to the Delaware Aqueduct in 2019. The operation for each boring is expected to take two months. The process has not changed dramatically throughout the last century as you can read in W. Courtland Thomas's 1938 article entitled Test Borings in Delaware Water Supply News, a newsletter published by the Board of Water Supply, a DEP predecessor agency.

A part of BEDC's Geotechnical Section, **Masud Ahmed** has extensive experience not only with core sample drilling, but also with the agency's core sample repository in the Bronx. From 1991 until 2008, Masud has been involved in core sample drilling for City Water Tunnel No. 3 in Brooklyn, Queens, and Manhattan. As Masud recalls, "In Manhattan we had 82 borings drilled in one stage and 28 borings

in another, over a stretch of eight and a half miles with each separated by about 1,000 to 1,500 feet. The borings ranged in depth from 500 to 800 feet and the first segment generally involves topsoil and the remaining section is composed of bedrock." He underscores the value of drilling as part of the preliminary assessment of the ground condition in providing tunneling projects with a geologic profile that includes "rock composition, strength, stresses on the rock, and the extent of groundwater presence at each location."

Masud is also the keeper of DEP's extensive sample collection. The Jerome Avenue Pumping Station in the Bronx houses more than 5,600 wood boxes that contain samples from the Brooklyn, Queens, and Manhattan tunnels, including some that are nearly 50 years old. The wood boxes are generally five feet long by 10 inches wide and four inches deep. One test boring could account for 700 feet of core samples broken into sections by 20 feet of cores, each 3 inches in diameter that require about 35 boxes of storage. DEP retains them until the particular job is over to ensure that the eventual construction work goes smoothly and safely.

Event Calendar

VISITOR CENTER AT NEWTOWN CREEK: Discussion and film screening event – Wednesday, February 8, 2012: Garbage Dreams (excerpt) and Gone Tomorrow: the Hidden Life of Garbage. For more information please click here.

We welcome your feedback! To submit an announcement or suggestion, please email us at: newsletter@dep.nyc.gov