4 MINUTE READ

Teaneck Creek Park

from **Engineering With Nature: An Atlas, Volume 3.**

by **US Army Engineer Research and Development Center**

Teaneck, New Jersey, United States

Using natural systems to restore freshwater wetlands. Low-lying Teaneck Creek Park in highly urbanized northern New Jersey is surrounded by residential and commercial development. Planned as a landfill in the 1950s, the site collected stormwater runoff from the surrounding development and was used as a rubble fill. A group of community partners, led by the Bergen County Department of Parks, undertook this project to restore eight hectares of diverse wetland habitat lost with the installation of a downstream tide gate and to protect adjacent land from stormwater erosion, localized flooding, and the ongoing degradation of Teaneck Creek. The project design, led by Biohabitats, called for excavating the rubble mounds and 30 centimeters of the surface soil dominated by *Phragmites*. A stormwater best management practice called regenerative stormwater conveyance (RSC) was used to repair the eroded stormwater flow paths and attenuate the runoff. Readily available sand and wood chips were used to construct an approximately eight-hectare wetland that stores runoff in more than 20 shallow pools. Water in the pools drains through vegetated, carbon-rich sand seepage berms, transforming nutrients into microbial

biomass. The RSCs, pools, and berms reduce peak discharge and improve water quality via physical, chemical, and biological treatment of the runoff. This process delivers cleaner, cooler water to Teaneck Creek. Construction was substantially completed in fall 2022.

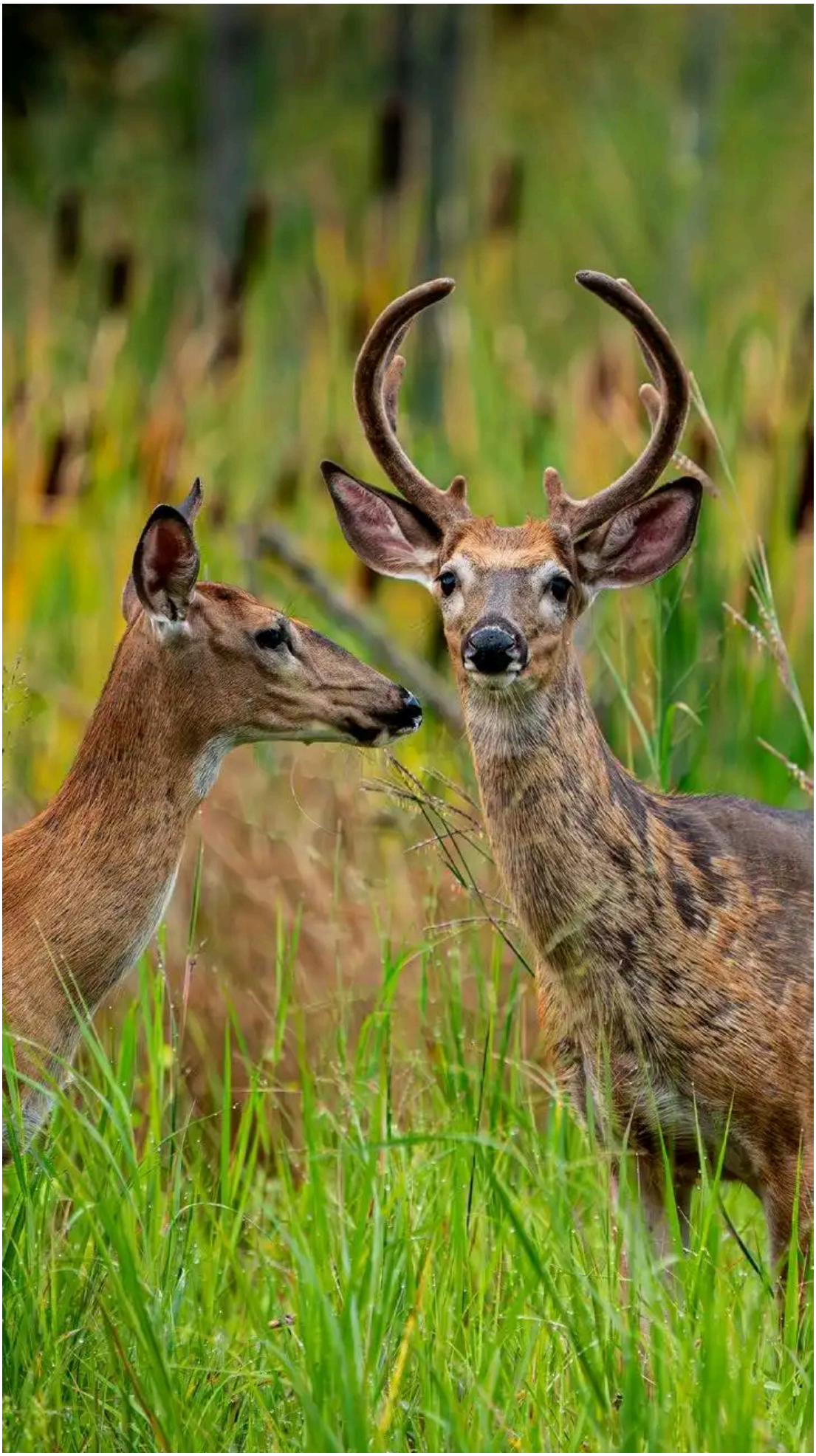
Article Cover: The interspersion of the plant communities at Teaneck Creek Park. Today, the site is a hot spot for family recreation and environmental education for school children. Additionally, it is a local source of pride for what is possible when diverse organizations collaborate. (Photo by David Ike Photography)

Producing Efficiencies

This project transformed a waste (i.e., stormwater) that was adversely affecting green space into a resource, restoring eight hectares of wetland; adding high-diversity habitat in an urban park; and reducing erosion, sediment, and nutrient pollution due to runoff. Dramatically increasing the surface area of the green space that comes into contact with the stormwater runoff reduced peak discharges, the flow path erosion associated with those peak discharges, and their associated shear stresses. It also increased the area of the natural resource in contact with the stormwater runoff, improving water quality and wetland habitat in the process.

Using Natural Processes

This project directs stormwater flows to a repeating series of 20 pools and carbon-rich sand berms with riffles to convey the runoff without causing erosion. The pools increase the surface area that the stormwater contacts; increase stormwater storage and infiltration in the landscape; and support physical, chemical, and biological treatment of pollutants in the stormwater. The carbon-rich sand berms serve as barriers to rapid drainage and support the development of hyporheic flows through the berms, further improving water quality. This process restored wetland form and function to eight hectares of degraded urban land, dramatically improving habitat for a variety of species.

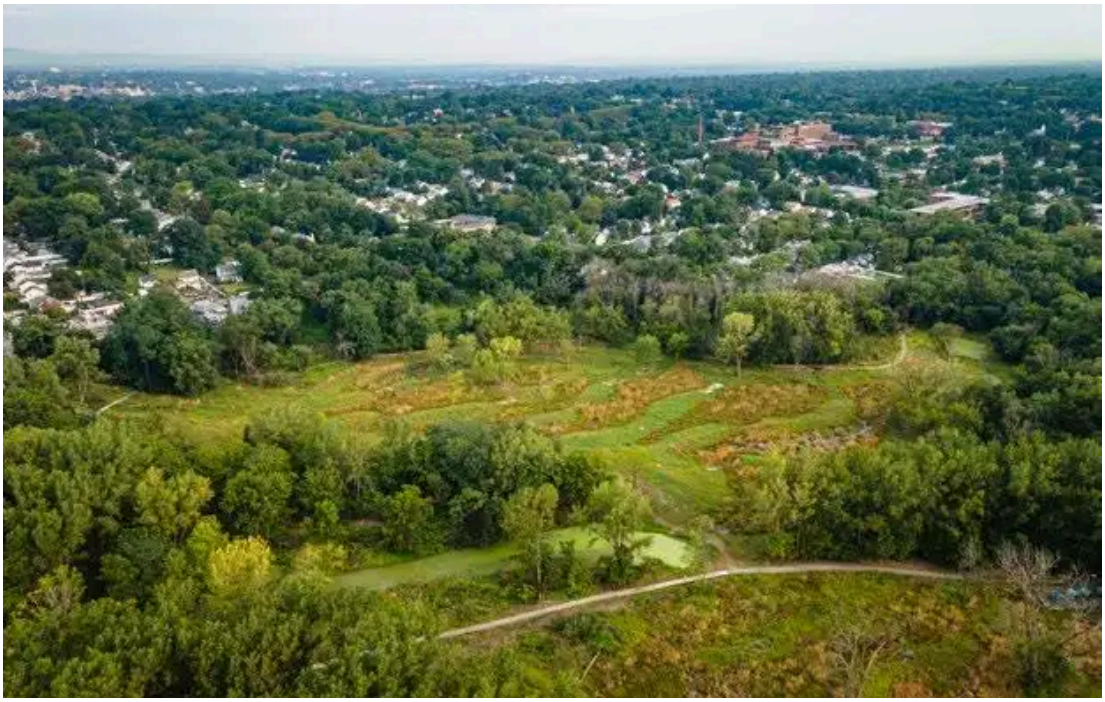


Whitetail doe and buck (Odocoileus virginianus) using the wet meadow area interspersed between and around the sand seepage pools at Teaneck Creek Park.

(Photo by David Ike Photography)

Broadening Benefits

This project aimed to improve conditions at a county park and resulted in a significant increase in the open space available to visitors. Before the project, most of the park was a difficult-to-access mosaic of rubble fill and *Phragmites*. Now, after the restoration project, large open areas are readily accessible from a series of earthen trails and elevated boardwalks. Environmental education and stewardship opportunities, as well as commitments to the park from Bergen County, have increased as a result of the project.



Aerial view of part of the Teaneck Creek Park sand seepage network, which includes a series of pools, sand seepage berms, and riffle grade controls. Old sand stockpiles were repurposed to build the sand berms, and grounded street trees were used as the carbon source for the berms.

(Photo by David Ike Photography)

Promoting Collaboration

This project was a collaboration of various groups, including Bergen County Public Works, Bergen County Parks, Rutgers University, Bergen County

Audubon Society, and the Teaneck Creek Conservancy. The project emphasized enhancing county parkland, repairing erosion problems due to stormwater runoff into the park, controlling invasive species, improving wildlife habitat to support the primary park uses of bird and wildlife viewing, and cleaning up past problems like rubble placement.

Regenerative stormwater conveyance (RSC) discharge under a boardwalk to the sand seepage network. A similar sand seepage wetland design approach was undertaken in an agricultural watershed at Bishopville, Maryland, in 2011.

(Photo by David Ike Photography)

One of the riffle grade controls at the project site.

(Photo by David Ike Photography)

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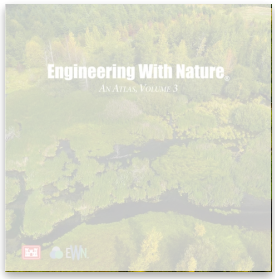

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