

NONPOINT SOURCE SUCCESS STORY

District of Columbia Alger Park Upland Low Impact Development and Stream Restoration Project Significantly Improves Water Quality

Waterbody Improved

The Alger Park Upland Low Impact Development (LID) and Stream Restoration Project is an example of DC's award-winning

watershed-based restoration approach. Before restoration, the stream running through Alger Park was highly degraded and incised, with eroded sandy banks as high as 40 feet. The stream was added to the 2008 Clean Water Act (CWA) section 303(d) list of impaired waters for multiple pollutants. The District Department of Energy & Environment (DOEE) implemented a restoration project focused on education and outreach, upland LID on both private and public space, and a large-scale stream and wetland restoration project in Alger Park. This project is reducing volume and velocity of stormwater entering the park, slowing flow within the channel, and improving in-stream water quality.

Problem

Located in southeast Washington, DC's Hillcrest neighborhood, a small low-flow stream flows through Alger Park and is a tributary to the Texas Avenue tributary, which flows into the Anacostia River and the Chesapeake Bay (Figure 1). The watershed drains approximately 32 acres, including 7 acres in Alger Park and 25 acres of mostly single-family homes and roadways around the park. The neighborhood around Alger Park is aptly named Hillcrest as it is steeply sloped. Prior to development, the stream in Alger Park was likely an intermittent stream. Six stormwater outfalls were constructed during the development of the neighborhood to convey runoff into the park's stream. The upper 850 feet of the stream is steeply sloped with sandy coastal plain soils. The combination of stormwater being directed at steeply sloped sandy soils caused massive channel incision and bank erosion. The total length of Alger Park is 1,541 feet; pre-restoration calculations showed 100 tons of sediment leaving the site due to bank erosion.

Story Highlights

The Alger Park Upland LID and Stream Restoration project is an award-winning comprehensive approach to watershed restoration in an urban environment. The project came to DOEE at the request of residents who lived adjacent to the stream and expressed concern about stream conditions. First, DOEE partnered with the Hillcrest Community Civic Association hosting



Figure 1. This restored stream flows through Alger Park in southeast Washington, DC.

education and outreach events explaining to residents how the stream became so degraded and what they, as watershed residents, could do on their properties to help restore the stream. Through living room talks, speaking at community events, and door-to-door flyers, DOEE reached all 132 property owners in the drainage area with information about the RiverSmart Homes installed at least one stormwater practice on their property (either rain garden, rain barrel, or shade tree).

During the early phases of project work, DOEE issued a 30% design contract exploring two options for both stream restoration and upland LID installations in the public right-of-way draining into the park. The



Figure 2. A green alley allows runoff to infiltrate.



Figure 3. This upland LID practice captures road runoff.

preferred design stream design alternative was then contracted out separately for full designs, which focused on a regenerative stream design for the upper portion of the stream valley and a wetland/floodplain reconnection approach to the lower portions of the project area. Concurrently, the District Department of Transportation issued a design contract for the LID to be installed in the public right-of-way.

In 2017, restoration work began in Alger Park by first filling the stream with a sand and wood chip mix, followed by installing a series of weirs and cascades to act as grade controls. Large pools between each weir/cascade helped dissipate stream energy and attenuate flow. In the lower area, the stream restoration consisted of a series of valleywide grade control structures that included buried logs to ensure highflow events would spread out over the entire wetland complex. Micro-pools were created in the wetland area to reduce energy and to create different types of inundation for a variety of native wetland plants. In total, the project restored over 1,541 feet of stream, created approximately 0.5 acres of wetland, and stabilized six stormwater outfalls. In addition, 29 upland LID practices were installed in public space, and 29 LID practices were installed on private property (Figures 2 and 3). In 2019, the Alger Park Upland LID and Stream Restoration Project received the Chesapeake Stormwater Network's "Best Stream Restoration Award" and "Best Urban BMP in the Bay Award (BUBBA)."

Results

The Alger Park project's success was achieved through a two-part approach. First, the upland LID installations treated stormwater runoff from over 200,000 square feet of impervious surface (retaining 11,500 cubic feet of stormwater) before flowing into Alger Park. Second, using the Chesapeake Bay Program's protocols for stream restoration pollutant load calculations, the stream restoration work at Alger Park will reduce 677,384 pounds (lbs)/year (yr) of total suspended solids, 991 lbs/yr of total nitrogen, and 355 lbs/yr of total phosphorus. Temperature and dissolved oxygen levels should also improve. Together, the upland LID and stream restoration will significantly improve water quality in both Alger Park and downstream receiving waterbodies.

DOEE contracted with the Metropolitan Washington Council of Governments, an independent nonprofit group, to perform rapid stream assessment survey monitoring on implemented stream restoration projects. Alger Park stream monitoring began in 2021 following completion of the 2017 project. According to the Macroinvertebrate Benthic Index of Biological Integrity (BIBI) Study, scores in April 2021 were slightly higher than in April 2015, indicating improvement (BIBI ranking changed from a *very poor* score of 1.6 to a *poor* score of 2.7). Further annual or biennial surveys are recommended to determine if improvement is a trend for the post-restoration period.

Partners and Funding

DOEE worked with the Hillcrest Community Civic Association on community outreach and education. DOEE contracted with LimnoTech and Biohabitats for design work and Environmental Quality Resources for construction work. DOEE received project funding from DC's Bag Law Fund, the National Fish and Wildlife Foundation, the U.S. Environmental Protection Agency's (EPA's) Section 319 Program, the EPA Chesapeake Bay Implementation Grant, and EPA's Clean Water State Revolving Fund.



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