DISTRICT DEPARTMENT OF THE ENVIRONMENT

Alger Park Stream Restoration

Washington, DC

clockwise from top: Stream restoration design; Severely eroded initial conditions; After restoration

Alger Park is located in an area of Southeast Washington, DC where 32% of the watershed is impervious. Nestled within the park's steep, forested slopes is a headwater stream that ultimately drains to the Anacostia River. Stormwater runoff from the 35-acre sewershed that surrounds the park had degraded the stream, causing severe erosion and channel instability. To help the District restore the stream's stability, habitat, and water quality, Biohabitats developed a design to restore 1500 linear feet of the stream. The upstream portion of the stream had steeply eroding valley slopes and stream banks, severe channel incision, and numerous headcuts. The downstream portion was a depositional area for a significant volume of sediment scoured from upstream reaches. A combination of excessive unmanaged stormwater flows from outfalls and overland flow pathways, along with steep topography, highly erodible soils, and invasive vegetation, contributed to impairments in the stream and surrounding park land.

Biohabitats began by assessing the watershed hydrology and stream geomorphology, existing natural resources, biological community, streambank erosion (Bank Erosion Hazard Index), and stream stressors in the stream valley to anticipate load reductions and associated environmental uplift from the restoration. The team then created a design to return Alger Stream to a natural, self-sustaining stream that can resist stormflows. The design approach was intended to improve ecological function to the extent practicable based on existing site constraints, such as the steep slopes and confined valley Establishing a floodplain connection was the most critical target for attaining restoration of stream function along the majority of the stream. In upstream reaches, the restoration approach was primarily focused on increasing the interaction between stream

conservation planning
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800.220.0919
www.biohabitats.com

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Anacostia River

Community members at ribbon cutting for restored stream

Step pools slow and retain stormwater

flows and potential floodplain areas. The design raising the channel bed elevation to provide a reconnection with geomorphic surfaces that had been suspended above and along the existing channel.

From a groundwater perspective, raising the stream invert restored a subterranean reservoir of the riparian area without the need for forest removal. With groundwater closer to the surface, historic wetlands, which had been drained by channel incision, may re-emerge. The additional stored groundwater is likely to increase and sustain baseflows during dry summer months. This is an essential parameter for sustaining aquatic biota. In addition, an increased hydroperiod will allow for more rapid establishment of native riparian vegetative communities, and suppression of non-native invasive species through development of a hydrologic regime outside of their normal tolerance range.

Restoration of the downstream reach focused on modifying and enhancing wetland conditions, removing Japanese knotweed currently dominating the reach, creating additional habitat complexity, and improving adjacent connections to stormwater outfalls. To maintain complexity in the wetland the design included a multi-threaded channel with naturalized valley-spanning wetland grade controls. The design integrated each of the existing storm sewer outfalls by eliminating large drops from existing outfall structures to the main channel and creating "bubbler" outlets that improve stability at outfall locations. The predicted annual load reductions for Alger Park Stream Restoration is up to 257,700 lbs. of sediment/year.

Habitat, water quality, and stability are restored on one of the most highly eroded stream gullies in the District within Alger Park, a popular neighborhood stream valley park nestled in Southeast Washington, DC.

Given the park's popularity and residential surroundings, communication and community engagement were essential for project success. Biohabitats participated in community site walks and attended community meetings during each phase of the design process to help the District ensure that residents understood the threats posed to the park by stormwater and that their questions were addressed. The project also includes one year of pre-construction monitoring.

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