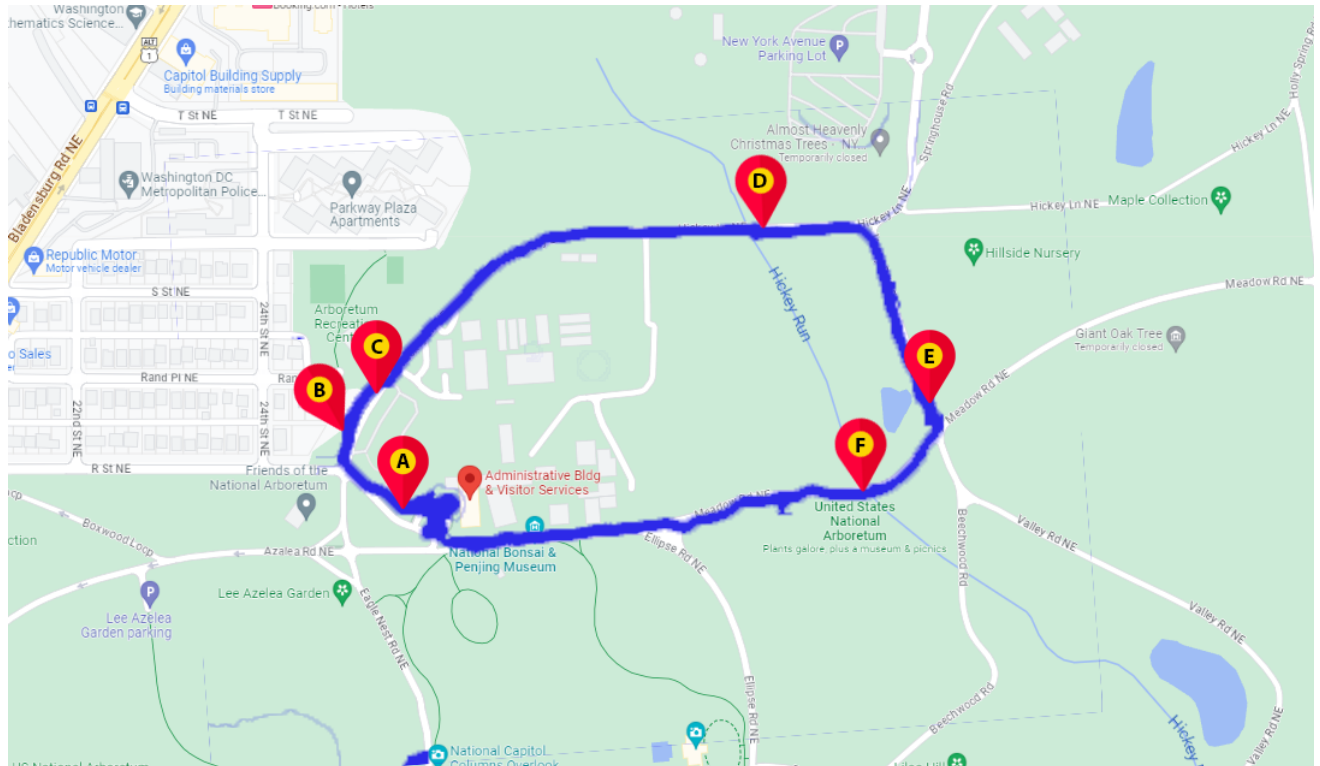


National Arboretum Walking Tour Map

October 19, 2023 Executive Council Meeting



A. Stormwater capture projects in front of the Administrative Building & Visitors Center.

These rain gardens were installed by DC DOEE and are maintained by the Arboretum.

B. Gravel wetland



This project was chosen over a traditional rain garden because there are a lot of utility lines underground at the arboretum. This project allowed DC DOEE to design a space that could capture and retain stormwater without digging and disrupting utilities.

C. Parking lot retrofit



The parking lot projects show smaller ways that runoff can be captured throughout the property. The parking lot retrofits were installed at the same time as the Springhouse Run restoration project. The five bioretention facilities help capture stormwater above the restoration sites

D. Hickey Run



Most of Hickey Run is covered by concrete so people in the neighborhood don't think about stream health because they don't see the stream. Upstream from this location is a filtering device that removes about $\frac{1}{3}$ of the pollutants from the water. DC DOEE wanted to work with residents and businesses to reduce pollution before beginning a restoration project at this site. About 10% of the surrounding neighborhood homes have adopted RiverSmart Homes and businesses have taken more measures to control pollution. Now

that more pollution and stormwater is being controlled upstream, DC DOEE can begin to look at restoring this stream.

E. Springhouse Run



This was a channelized stream that was experiencing significant erosion. In 2016, a restoration project began to return the stream to its natural state using regenerative stream channel design. The team also removed 1,000 truckloads of legacy sediment that was used for other projects on the arboretum grounds. Since the project was completed, DC DOEE has recorded an increase in birds and other wildlife.

F. Joining of Hickey Run and Springhouse Run



This site will show where the restored Springhouse Run and impaired Hickey Run join into one river. On the other side of the bridge, the combined stream continues in a straight line down to the Anacostia River.

Hickey Run Watershed

The Hickey Run watershed is an area covering about 2 square miles of northeast Washington DC. Today only a one-mile stretch of stream remains with one tributary named Springhouse Run. It includes the neighborhoods of Langdon, Arboretum, South Woodridge, West Fort Lincoln, South Brookland, Mt. Olivet, Brentwood, and Gateway. All of the stormwater that falls in the watershed's neighborhoods drains into Hickey Run. It is one of many streams that drain into the Anacostia River, which makes up part of the larger Chesapeake Bay watershed.



During the Civil War Era, Hickey Run was a vibrant watershed with over five miles of streams and 15 tributaries. Residential and industrial growth led to putting streams in pipes across the District, including Hickey Run's streams and tributaries that now flow underground.

Today, only a small portion of the stream is naturalized, or above ground, and is located in the U.S. National Arboretum. Over the last 30 years, the [impervious area](#) of the watershed has increased dramatically, contributing to erosion and pollution in the stream. Furthermore, dense industrial and residential activity has harmed the watershed.

In 2010, the Department of Energy and Environment (DOEE) began exploring the restoration of Spring House Run. To complement this restoration effort, DOEE is rallying the community. Some low-cost measures by homeowners, such as installing a rain barrel or planting a tree, have the potential to significantly improve water quality. By taking advantage of the incentives and offers via DOEE's [RiverSmart Homes](#) program, the watershed's residents can be heroes in the effort to restore Hickey Run.

[The Good](#) | [The Bad](#) | [The Ugly](#)

What DOEE is doing about it?

DOEE is working to reduce stormwater runoff in Hickey Run through public education on how the stream is affected by stormwater issues as well as ways they can help their properties. DOEE's goal is to have 25 percent of the households in the Hickey Run watershed participating in the [RiverSmart Homes](#) program (approximately 385 households). As of the end of 2014, 200 houses have participated.

In addition, DOEE is planning other restoration projects in the watershed. DOEE has inspectors working with businesses to prevent pollution and responding to contamination issues should they arise. DOEE has installed a large filtration device under New York Avenue NE to help minimize trash and sediment that flows downstream and watershed implementation plans and Total Maximum Daily Loads (TMDLs) have been developed to address further degradation of the watershed.

The [RiverSmart Homes](#) program is a District-wide program that offers incentives to homeowners interested in reducing stormwater runoff from their properties. Homeowners receive up to \$1,600 to adopt one or more of the following landscape enhancements:

- [Rain Barrels](#)
- [Shade Tree Planting](#)
- [Rain Gardens](#)
- [BayScaping](#)
- [Pervious Pavers and Impervious Surface Removal](#)

If you would like to join the 200+ participating residents of Hickey Run and become a Hickey Run Hero, please [sign up](#) today.

Hickey Run Challenge

In 2014, DOEE hosted the Hickey Run Neighborhood Challenge by encouraging watershed residents to participate in RiverSmart Homes on their block ([see map](#)). The winner was determined in December 2015 by tracking the block with the most participating RiverSmart Homes (with at least two installations). As a prize, the winning block will receive a "green block makeover."

DOEE would like to congratulate the 2000th Block of Hamlin Street NE for having the following:

- As of the end of December 2015 73% of the street participated in the RiverSmart Homes program
- 45% of the street installed more than two RiverSmart Home features. This was more than any other block in the watershed and makes them the winner.
- 100% have participated in the RiverSmart Program as of March 2016.

What you can do about it?

In addition to participating in RiverSmart Homes, there are many ways that citizens can become more involved in creating a healthy watershed.

- **Invasive Plants:** Help the environment by [learning more](#) about what you can do to remove invasive plants in your neighborhood.
- **Report a problem:** Residents can report issues by doing the following:
 - Contacting DOEE's Emergency Operations Chief, John Emminizer (202-645-5655 / john.emminizer@dc.gov)
 - Calling 911 for immediate hazards or threats
- **Advocacy:** Spread the word about improving Hickey Run by continuing to talk with friends and neighbors about the community meeting that were held in the watershed. These efforts will help with the creation of a community group to advocate for the watershed. Please email Kevin Jeffery at kevin.jeffery@dc.gov for more information.

Upcoming Events

Currently, DOEE is working to secure a designer for the project and will be informing the winning block as soon as this is complete to help envision the project.

Related Content:

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NONPOINT SOURCE SUCCESS STORY

District of Columbia Regenerative Stream Channel Design and Bioretention Retrofit Restores Springhouse Run

Waterbody Improved

The Springhouse Run project is part of an integrated watershed-based restoration approach. Before restoration, Springhouse Run was a highly linear, channelized stream that experienced significant stream bed and bank erosion. The stream was added to the 2008 Clean Water Act (CWA) section 303(d) list of impaired waters for multiple pollutants. The urbanized character of the upper section of the watershed creates conditions for flashy and intense stream channel flows. Implementing education and outreach about the harmful effects of stormwater pollution, returning Springhouse Run to its natural state as a self-sustaining stream, and replacing five stormwater pipes and outfalls with bioretention facilities led to improved Index of Biological Integrity metrics and stream water temperature.

Problem

Located in northeast Washington, DC, Springhouse Run is a tributary of Hickey Run, which feeds into the Anacostia River and the Chesapeake Bay. The drainage area of the watershed is approximately 152 acres and is composed of two distinct parts: an upper portion that is piped and a lower portion that flows at the surface, with New York Avenue NE serving as the dividing line between the two sections. Springhouse Run's headwaters originate in a pipe at an unidentified location. The stream daylights in the U.S. National Arboretum, just south of New York Avenue NE, and flows to the southwest approximately 1,800 feet where it joins Hickey Run (Figure 1). The heavily urbanized character of the upper section of the Springhouse Run watershed and its impervious nature produce conditions for flashy and intense stream channel flows.

Story Highlights

The Springhouse Run stream restoration project is part of an integrated watershed-based restoration approach. For nearly a decade, District Department of Energy and Environment (DOEE) conducted outreach and education to residents and businesses within the Hickey Run and Springhouse Run watersheds about the harmful effects of stormwater pollution on receiving waterbodies: tributaries of the Anacostia River, the river itself and the Chesapeake Bay. DOEE's many [RiverSmart programs](#) (e.g., RiverSmart Homes, RiverSmart Communities, RiverSmart Schools) provide

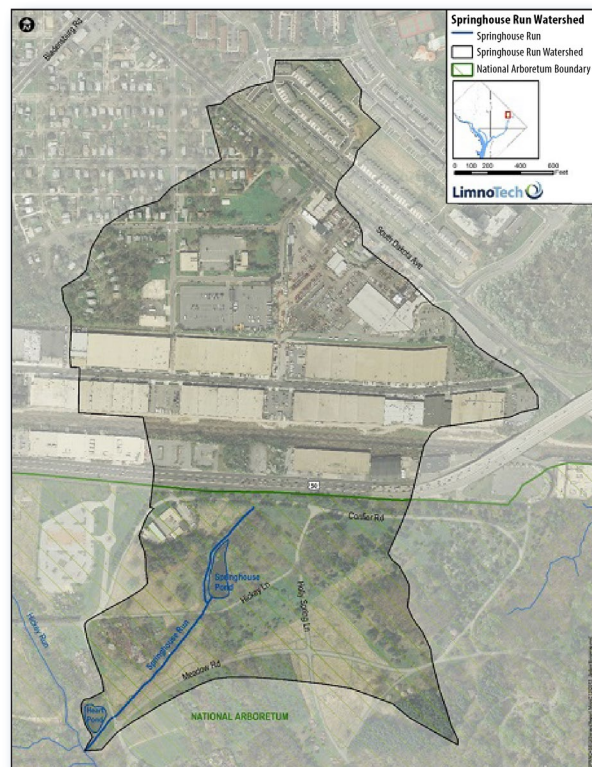


Figure 1. Springhouse Run is in Washington, DC.

resources to residents, students and educators about stormwater's effects on local waterways. The programs also provide incentives to install best management practices (BMPs) to reduce the volume of stormwater runoff entering local waterways. Other strategies include the GreenWrench Technical Assistance

Program, which provides free pollution prevention guidance for mechanics and auto body shops.

Stream restoration activities, which began in 2016, included returning Springhouse Run to its natural state as a self-sustaining stream by using regenerative stream channel and legacy sediment removal techniques along 3,600 feet of stream (Figure 2). The regenerative stream channel approach incorporates natural stream channel design techniques and materials. This innovative restoration approach results in a system of physical features, chemical processes and biological mechanisms that enhance the ecological and aesthetic value of the stream. Features of regenerative stream channels include a series of riffles and pools, sand and wood chip fill, rock weirs and large woody debris (e.g., reusing trees felled during construction). Goals include increasing infiltration and subsurface water flow, reconnecting the stream with the floodplain, managing stormwater, reducing sedimentation and nutrient transport downstream, and providing habitat diversity. The project also removed 1,000 truckloads of legacy (existing) fill and sediment from the stream channel to recreate the floodplain valley.

The second BMP included retrofitting the U.S. Arboretum's visitor parking lot with five bioretention facilities (6.17 acres total). Prior to the retrofit, stormwater from the parking lot entered catch basins and discharged directly to Hickey Run.

Results

DOEE awarded a grant to the Metropolitan Washington Council of Governments to perform pre- and post-restoration monitoring. Monitoring includes three primary components: (1) physical, geomorphic and baseflow conditions; (2) baseflow water quality conditions; and (3) a biological community assessment. The biological data assessment showed that the benthic macroinvertebrate index of biological integrity (IBI) improved from a score of 1.6 (very poor) in 2014 to a range of 2.1–3.0 (poor–fair) in 2018 after restoration. Both the number of individuals collected and the total number of taxa in the stream increased after restoration (Table 1). In addition, two new species of fish were collected in 2018 sampling (after restoration) that had not been observed in the 2014–2015 monitoring years. The Fisheries and Wildlife Division of DOEE conducted monitoring surveys of the



Figure 2. Springhouse Run, before and after project.

Table 1. Springhouse Run macroinvertebrate IBI data.

Sample date	Individuals collected	Number of taxa	MBSS IBI score	MBSS IBI ranking
4/28/2014	28	7	1.6	Very poor
4/11/2018	163	30	3.0	Fair
8/14/2018	158	17	2.1	Poor

Springhouse Run project area and found 68 species of birds in 2015–2016 (before restoration) and 72 species in 2017–2018 (after restoration).

Another monitoring project, using a series of strategically placed data loggers, indicated that the system of subsurface flow patterns created by a coarse sand lens and perforated pipes decreased water temperature. As the stream matrix matures through an increased area of root matting and vegetative cover, the temperature during summer will continue to improve.

Partners and Funding

Partners included the designer, LimnoTech; the construction contractor, Underwood and Associates; the U.S. Environmental Protection Agency's (EPA's) nonpoint source pollution program, the U.S. National Arboretum; Friends of the National Arboretum and DOEE. The project cost, including design and construction, totaled \$1.8 million. Funding sources included local funding, EPA Chesapeake Bay Implementation grant and EPA's CWA section 319 nonpoint source pollution grant (\$614,000).



U.S. Environmental Protection Agency
Office of Water
Washington, DC

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