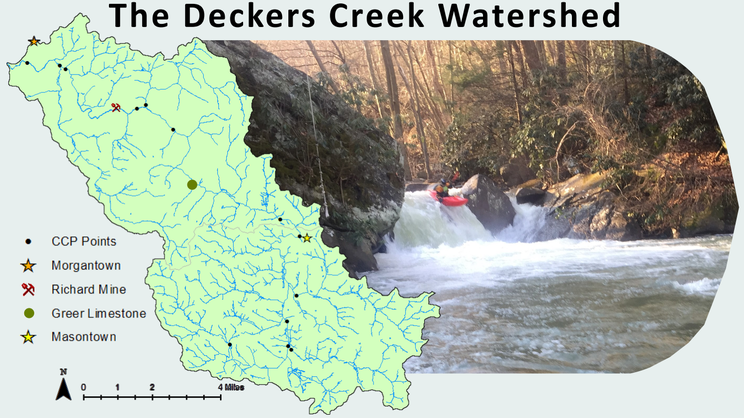
The Deckers Creek Watershed



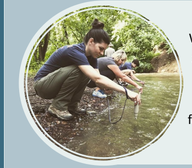
Treatment Sites

Friends of Deckers Creek operates 9 acid mine drainage (AMD) treatment sites throughout the watershed. These sites have made a significant impact on the water quality in Deckers over the years, removing dissolved metals and neutralizing the water's pH. FODC uses data from the Clean Creek Program to evaluate the impacts of these systems.

Wildlife in Deckers

A cleaner Deckers Creek has become host to many wildlife populations that previously suffered. Heron, box turtles, frogs, beavers, and even a rumored river otter family reside in our watershed. While the fish and macroinvertebrate populations are used to judge health, the presence of other wildlife further illustrates improvement in the creek's health.

Citizen Scientists



While FODC monitors 13 sites throughout the watershed, the Citizen Scientist Program more than triples the amount of sites monitored. Our Citizen Scientists sample monthly for water quality and allow us to have eyes and ears on the ground, enabling early detection for issues in Deckers. Citizen Scientist data is compiled and utilized to track trends throughout the year.

I'm a Friend of Deckers Creek!

__$10	Student
__$25	Individual
__$50	Family
__$75	Establishing
__$100	Benefactor
__$300	Clean Creek Program (CCP) Sponsor
__$500	Major Donor

NAME _____

ADDRESS _____

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Renew membership online at www.deckerscreek.org and click on "Donate"

Friends of Deckers Creek
PO Box 877
Dellslow, WV 26531

__$60	**Business Member**
__$150	**Event Sponsor**
__$300	**Clean Creek Program (CCP) Sponsor**
__$500	**Major Business Donor**

Thank you for Making this Program Possible!

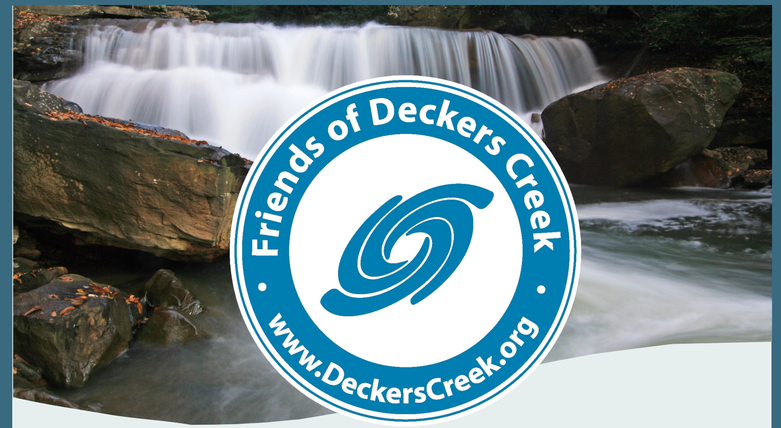
The Clean Creek Program is funded by the West Virginia Department of Environmental Protection and Stream Partners, with additional help and support from the following locals and businesses in the community:

The Morgantown Utility Board, Hope & Dr. Thomas Covey, Vicky Shears & Dan Doyle, Karl and Patty Diefenbach, David and Kathleen Raese, Heimo and Nora Riedel, Annette Tanner, Susan & Don Sauter, Rick Landenberger and Nektaria Adaktilou, Dominion Post, Mary Wimmer, Nancy Ruhe, WVNET, Mylan, Morgantown Rotary Club, BlissBlissBliss, Mountain Path Properties, Tailpipes Gourmet Burgers, Morgantown Brewing Company, Big Blue Apartments LLC., Tim Warner & Paula Hunt, Dr. Ellen Hrabovsky, Downstream Strategies, Blaine Turner Advertising, MedExpress

West Virginia University students, volunteers, and board members helped with fish sampling, Montgomery County Community College students helped with macroinvertebrate sampling, and numerous volunteers helped with water quality sampling.

Call for Citizen Scientists!

Looking to do more for your community? FODC is recruiting volunteers for our Citizen Science Program. Check out deckerscreek.org/citizen-scientist to learn more and get involved!



State of the Creek Report

Our Mission: *To improve the natural qualities of, increase public concern for, and promote the enjoyment of the Deckers Creek Watershed.*

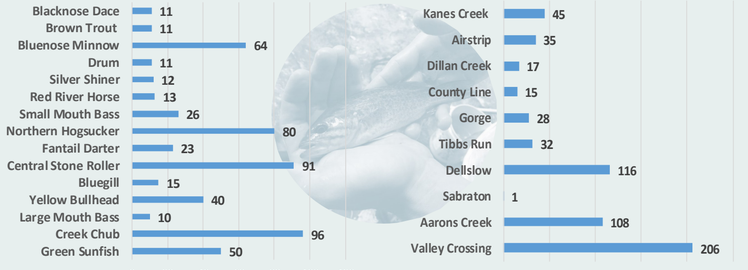
In 2002, Friends of Deckers Creek (FODC) began the Clean Creek Program to track long-term water quality and biological trends throughout the watershed.

Over the past 16 years, FODC has monitored water quality quarterly and sampled fish and macroinvertebrate populations annually. Data is collected from 13 sites throughout the 64-square-mile watershed. The longstanding data collected through this program allows us to evaluate the success of our water treatment systems, direct where best to focus future remediation efforts, and inform the community about the impacts of acid mine drainage (AMD) and other pollutants.

Fish & Macroinvertebrates

While water chemistry provides a snapshot of the quality of water at the time of sampling, it is imperative to also sample for benthic macroinvertebrate (bottom-dwelling bugs) and fish populations over a period of time to evaluate long-term improvements. The presence and abundance of certain species indicate improvements in water quality and habitat. In the charts below, fish species with a count of less than 10 are not included.

Fish Species Count



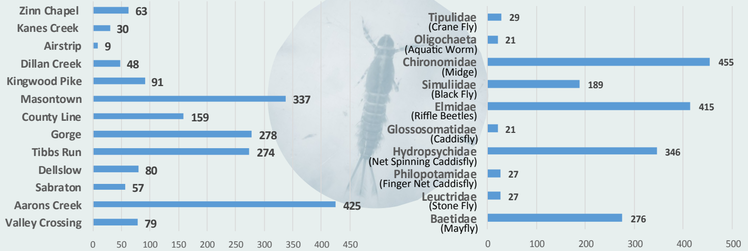
Total Fish per Site

Mayflies, stoneflies, and caddisflies are specialist species. This means they only populate clean water, and are considered indicator species of good water quality. When analyzing macroinvertebrate samples we pay special attention to which sites are rich and which are barren. We use this to pinpoint where remediation efforts need to be focused. In addition, some fish species such as trout are indicator species in cold-water stretches because they, too, are sensitive to poor water quality.

In the charts below, the **WV Stream Condition Index** scores are used to analyze macroinvertebrates:

less than 55 is a poor reading; 55 to 69 is marginal; 70 to 85 is good.

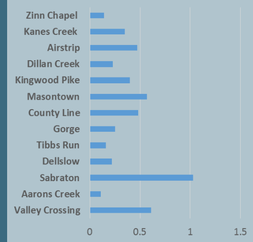
Total Benthic Macro Invertebrates by Site



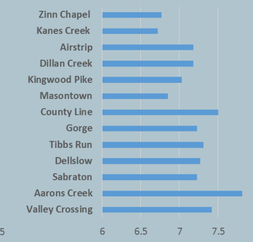
Benthic Macroinvertabrates by Family

Water Quality

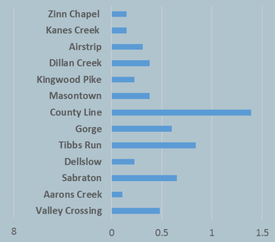
Water Quality - Iron (mg/L)



Water Quality - pH



Water Quality - Aluminum (mg/L)



Deckers Mainstem Then & Now

	Average water quality **2002**	Average water quality **2017**
pH	**6.5**	**7.19**
Iron	**1.39 mg/L**	**0.39 mg/L**
Aluminum	**1.00 mg/L**	**0.48 mg/L**

Clean Creek Program

Water quality is measured by taking the flow, pH, and grab samples for metals from Deckers Creek. The three most common indicators of acid mine drainage pollution are the presence of iron, aluminum, and acidic pH. FODC uses WVDEP standards of Total Maximum Daily Load to determine water quality.

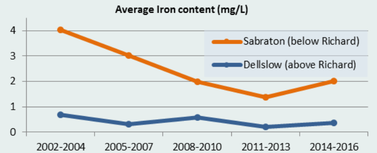
Acid Mine Drainage

Mining exposes previously concealed pyrite to surface water and oxygen. Composed of iron and sulfur, when pyrite is exposed to water and oxygen, it undergoes a chemical reaction, forming sulfuric acid and dissolved iron. The resulting high acidity (low pH) solution further reacts, dropping out dissolved metals that cause the bright orange and light blue colors seen in the photo to the left. This becomes the source of metals dissolved in the creek.

Due to the abundance of mining in the area, acid mine drainage (AMD) is the most common pollutant in the Deckers Creek Watershed. Mines that operated prior to the Surface Mining Control and Reclamation Act (1977) are now abandoned and feed pollutants into our watershed. We manage and maintain nine treatment sites in order to slow these pollutant inflows.

Richard Mine

Average Iron content (mg/L)



The Richard Mine seeps hundreds of pounds of acid mine drainage (AMD) into Deckers Creek a day. The AMD discharged from the Richard Mine is highly acidic, with a minimum pH of 2.4, which destroys the aquatic life in Deckers Creek. This creates an ecological barrier between our healthy fish and macro populations above and below the mine.

The mine discharges iron, aluminum, and manganese into Deckers Creek, at the combined rate of 292,000 pounds each year. These heavily-polluted waters enter Deckers Creek just 3.5 miles upstream of Morgantown. The charts above and to the right display the striking difference of creek health upstream and downstream of the Richard Mine discharge point.

Average pH