

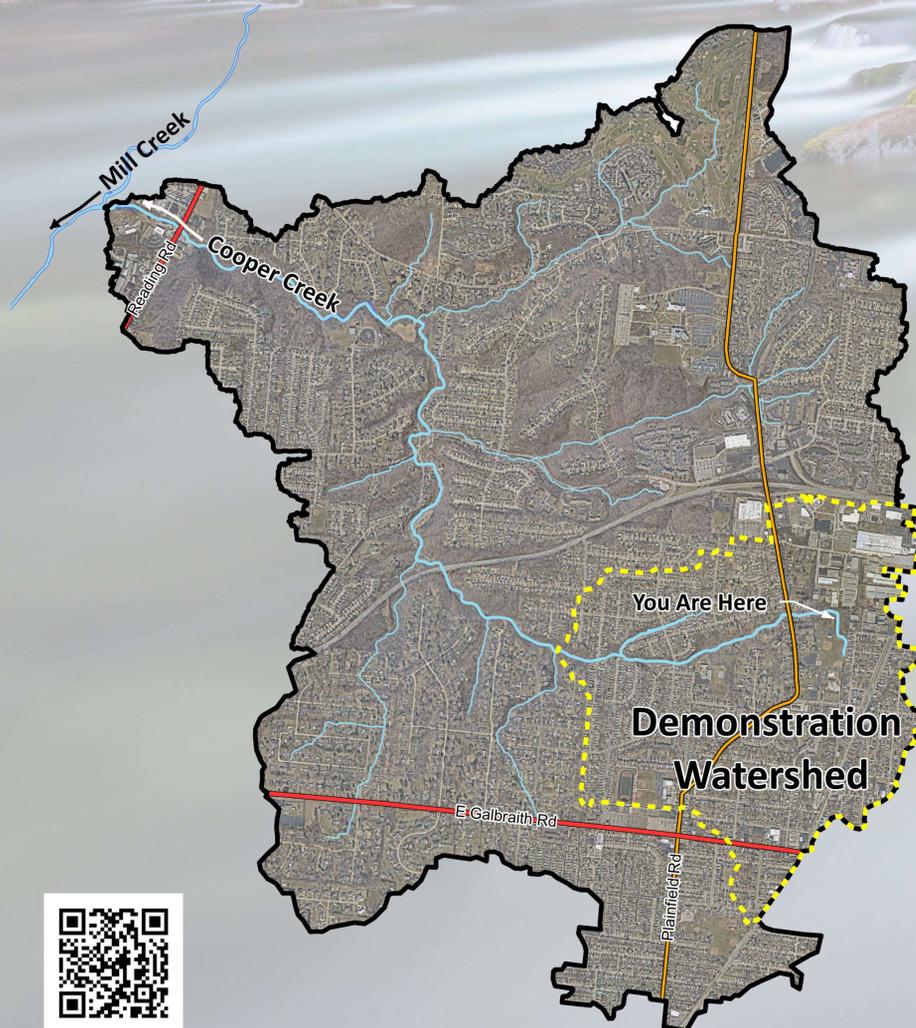
# RESTORING WOOD STRUCTURES TO COOPER CREEK

## for Natural Flow Patterns and Habitat

### YOU ARE IN THE COOPER CREEK WATERSHED

You are standing beside Cooper Creek near its upper end (see map). The water you see flowing down stream (if there's water—more on that in the next section) has entered the creek from 1) overland runoff (stormwater) and 2) groundwater—water that soaks into the soil, slowly makes its way downslope and into the creek. This water is on a long journey through Cooper Creek, then Mill Creek, then Ohio River, then Mississippi River and finally into the Gulf of Mexico.

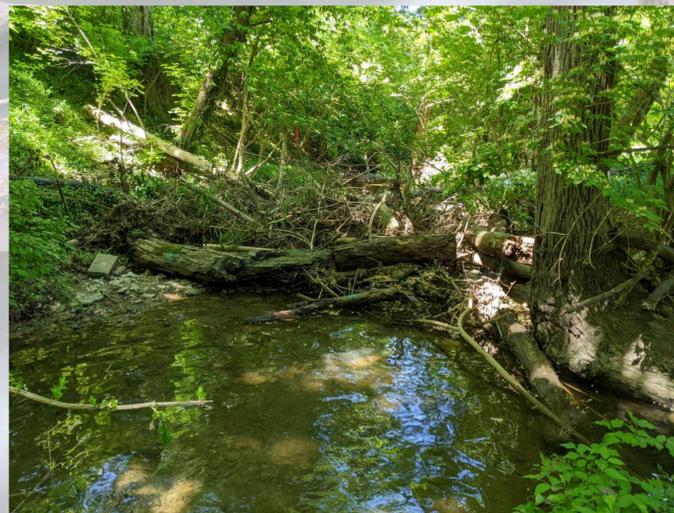
The area of land contributing water to a location along the creek is a *watershed*. The area contributing water to this location in the creek is 215-acres or 1/3 of a square-mile in size. The characteristics of the watershed impact how much water (and pollution) is in the creek—and that determines what can live in it.



### THE WATERSHED DETERMINES WHAT'S IN THE CREEK

Cooper Creek's watershed is heavily developed—almost 50% of the land surface of the Demonstration Watershed (see map) is covered by impervious surfaces (roads, parking lots, and buildings, etc.). As a result, the flow patterns in the creek are highly altered. Frequent erosive flash-flows during rain events have led to habitat destruction and excessive streambank erosion downstream. Lack of rainwater soaking into paved-over soils has contributed to reduced groundwater levels which are needed to sustain flow in the creek between rain events (baseflow). This “hydrologic alteration” is a major problem limiting the types of aquatic wildlife that can survive in the creek.

This section of Cooper Creek is home to fishes, salamanders, water snakes, and invertebrates such as cray fish. However, there is very low species diversity in the creek because only the most tolerant species can survive the harsh flow conditions in the creek.



Hand-placed log structure located just downstream of the park—has scoured out a deep pool that is functioning as critical habitat for fish and other wildlife in the creek.

### WOOD IS IMPORTANT FOR NATURAL STREAMS

Log structures are common and important parts of natural streams in undisturbed watersheds. These structures are among the most significant *flow resistance* elements in streams slowing down flows during storm events and reducing stream erosion. These structures also induce deep scour pools that are critical habitat for fish and other wildlife. These deep scour pools are especially important in streams with baseflow impairment, like Cooper Creek, where they function as refuge for fish when water levels get low. The wood itself also serves as an important habitat and food sources for in-stream wildlife.

The Collaborative has used dead/dying trees from here in the park to restore natural log structures to the creek. Do you own creek-front property that could benefit from hand-placed log structures?

### COOPER CREEK COLLABORATIVE IS HERE TO HELP!

Cooper Creek Collaborative is bringing together scientists, engineers, planners, local landowners, and volunteers to restore more natural flow patterns to the creek. The Collaborative has established the 1-square mile area draining to the upper-most section of the creek as a *Demonstration Watershed* (see map). The Collaborative is committed to sustained effort to install “hydrologic mitigation” projects throughout the Demonstration Watershed, until more natural flow patterns are achieved. An example of one of these projects can be found in the creek right in front of you—hand-placed log structures. Learn why below.

If you are a property owner in the Cooper Creek watershed, and interested in hosting a project on your property to improve the creek we'd love to talk to you! You can contact us at [www.CooperCreek.org/contact](http://www.CooperCreek.org/contact).



Cooper Creek Collaborative volunteers installing a hand-placed log structure just downstream of the wooden trail bridge in Bechtold Park.

### OUR STREAMS ARE WOOD-STARVED

Clearing of forests to make way for agriculture and development has starved streams of the falling dead trees that naturally supply wood to streams. Unfortunately, it is common practice for people to remove wood from streams. A common misconception is that keeping streams “clear of debris” will help prevent flooding. However this can worsen flooding downstream by contributing to more “flashy” flows. These *flashy* flows also often lead to excessive streambank erosion that damage public and private infrastructure.

While local governments will remove “log jams” from road crossing culverts, this is not a reason to remove wood from other locations in streams— having a system of log structures throughout a stream can reduce the amount of wood moving downstream because each of these structures functions as a filter, straining-out and retaining wood pieces delivered to them by stream current.

