

## Successes & Challenges

### Successes

- Webster Township has a farmland and open space preservation program, and Legacy Land Conservancy is focusing efforts on preserving natural and agricultural lands in Arms Creek. The southern portion is part of Ann Arbor's Greenbelt program, and Washtenaw County's Independence Lake Park is home to a wide variety of natural areas. So far over 3,400 acres have been protected.
- Webster Township has expanded upon the protections given by the State's Natural River Zone. Webster Township protects the creek by prohibiting all building 100 feet from the watershed's lakes and streams, including a requirement to maintain a 25 foot vegetated buffer along the creek. The township also requires a 25 foot setback from wetlands. (Farmland practices are exempt).
- Webster Township has a strong stormwater ordinance that requires new developments to minimize runoff to the Arms creeks, its tributaries, and wetlands.

### Challenges

- Webster Township and the residents of Arms creekshed must promote compact development and preserve natural areas and open spaces. It is extremely important to prevent the creation of more impervious surface in order to maintain the creek's integrity.
- Arms Creek is full of fine sediment that is likely caused by two hundred years of agriculture combined with a naturally flat stream gradient and a geology that is dominated by naturally fine glacial sediments. Fine sediment fills in small hiding places for fish and macroinvertebrates and lowers overall abundance and diversity.
- Greater participation in agricultural conservation programs such as the Conservation Reserve (CREP) and Wetland Reserve (WRP) Program would help reduce runoff and erosion. Those programs are offered through the Washtenaw County Conservation District office.



A team of U-M grad students walked a portion of Arms Creek in August 2013. Credit: Nate Gainer

## What you can do!

### At home

- On residential lands, be sure to follow the Webster Township ordinance by maintaining a 25 foot buffer of native plants between your yard and the creek.
- On agricultural lands, maintain a 25 foot vegetated buffer, ideally made of native plants, from all ditches, creeks, and water bodies. Also, contact the County Conservation District and ask about conservation programs.
- Have your septic system checked regularly. Leaking septic systems can be a large source of phosphorus and *E. coli*.
- If you own property with a natural area, work with Legacy Land Conservancy to establish an easement to protect it from future development.

### In your community

- Encourage Webster Township to continue to enforce their riparian buffer and stormwater ordinances.
- Get out and enjoy the creekshed!
- Volunteer with HRWC and come learn about the river and land that drains to the Huron River.



# Arms Creekshed Report

[www.hrwc.org/arms](http://www.hrwc.org/arms)

## Creekshed Profile

Arms Creek flows through a beautiful, rural setting. It is one of only three Huron River tributaries that has a portion designated by Michigan as a Natural River Zone. This designation restricts the location of new buildings and the clearing of trees and other vegetation close to the creek, preventing bank erosion and retaining the scenic appearance of the creek.

The creek meets the Huron River slightly upstream from Baseline Lake, at the southern edge of Livingston County. Nearly all of the creekshed is located in Washtenaw County and Webster Township. Most of the creekshed is owned by private landowners.

Arms Creek is composed of 13 miles of branching stream channels, and it drains 21 square miles of land. Over the length of its run, the main branch's elevation drops 62 feet. The average slope of the main branch and the west branch is 7 feet per mile, which is about 50% flatter than an average Huron River tributary. Fish and other aquatic life are typically more diverse and productive in streams with a gradient of at least 10 ft/mi.

There are 7 lakes (open water > 5 acres) in the Arms creekshed. The biggest lake, Independence Lake, is 190 acres, and approximately 60% of its shoreline is adjacent to Washtenaw County's Independence Lake Park. The park is 414 acres and contains 3.5 miles of nature trails that meander through high quality wetlands, woodlands, and prairies.



● Monitoring site for Aquatic Insects, Stream Habitat, and Stream Temperature

For more details on these parameters, please see inside.

● Natural River Zone

# Creekshed Status and Trends



Parts of Arms Creek have a "lost in the woods" feel to them.

## Creekshed Land Use

### Habitat for a healthy ecosystem

For the year 2000:

Total creekshed Size: 21 square miles

Agriculture: 45%, 9.4 square miles

Residential & Urban: 15%, 3.0 square miles

Forest: 15%, 3.2 square miles

Open: 9%, 2.0 square mile

Wetland: 14%, 3.0 square miles

Total Impervious surface: 3.5% .74 square miles

Numerous studies have shown that fish and insect communities are less diverse when the amount of impervious surface exceeds 10-12% of the total watershed area. Only 3.5% of the Arms creekshed is currently impervious, and so the creek enjoys the benefits of the natural water cycle.

## Creekshed Natural Areas

### Many natural lands yet to be protected

The creekshed's forests, wetlands, and grasslands soak up rainwater and runoff, filter pollutants from runoff, and provide wildlife habitat and beautiful places for us all to enjoy. About 35% of the creekshed has natural areas. However, only a small fraction of these areas are protected from development (about 6% of the watershed, including Independence Lake county park). The vast majority (86%) of the creekshed's natural areas face an uncertain future. It will be important to keep these lands natural, so they can continue to help keep the creek healthy.

## Stream Habitat

*Excellent riparian and instream habitat in some places; mucky and silty substrate throughout.*

Portions of Arms Creek flow through forested riparian areas, which provides dense shade and valuable woody debris habitat. However, nearly half of Arms creekshed is agricultural land, and agricultural practices have covered the bottom of Arms Creek with a fine silt. The creek does not flow fast enough to wash this silt downstream.

## Dams and Impoundments

*Absent*

While dams provide recreational benefits they greatly alter a stream's hydrology, and can degrade fish and insect habitat. There are no known dams on Arms Creek.

## Fish Community

*Cool-water fish community*

The Michigan DNR stocked Arms Creek with brown trout in the 1980s, but this was discontinued in 1988 because angler use was too low to justify the cost. A 2012 Michigan DNR survey found that the most numerous fish here are mottled sculpin, bluegill, fantail darter, largemouth bass, and white sucker. Other members of the sunfish family are also here in large numbers (green sunfish, pumpkinseed, rock bass).

## Aquatic Insect Community

*Average total diversity, and lacking sensitive species in the spring and fall.*

Overall, Arms Creek has an average insect community compared to other Huron River tributaries. It is striking that winter stoneflies are found here consistently, but other sensitive species are only rarely found in the spring and fall. This indicates some type of seasonal disturbance; perhaps agricultural runoff plays a role in this.

## Stream Water Temperature

*Cold to cool water*

Arms Creek receives a mix of cold groundwater and cool water runoff from agricultural tile drainage. Some of the stream is shaded by natural riparian areas. Water temperature measurements show that Fleming Creek only gets above 70°F on the hottest summer days, and can drop as low as 58°F on summer nights. Arms Creek is colder than most of the other streams in the Huron River watershed.

## Conductivity

*Normal*

Conductivity is a measurement of the amount of ions (also known as salts) dissolved in water. Conductivity is a quick and easy measurement to make, and is useful as an indicator of potential problems, since conductivity is highly correlated with total dissolved solids (TDS). Conductivity levels in Arms Creek are normal and have been normal since monitoring began in 1995.

## Water Quality

*Unknown*

Beyond conductivity, water quality measurements (such as phosphorus, bacteria, nitrogen, and total suspended solids) have not been made in Arms Creek by HRWC or any other known organization or individual.

## Stream Flow

*Unknown*

Stream flow is an important underlying factor for determining likely erosion rates, stream habitat quality, and aquatic community diversity. Stream flow measurements have not been made in Arms Creek by HRWC or any other known organization or individual.

## Color Coded Ranking

Excellent

Fair

Poor

Unknown



HRWC intern Colin Hume surveys one of Arms Creek's many wetlands. Credit: HRWC



Slow flowing water allows for macrophytes (water plants) to grow in the creek. Credit: Nate Gainer