

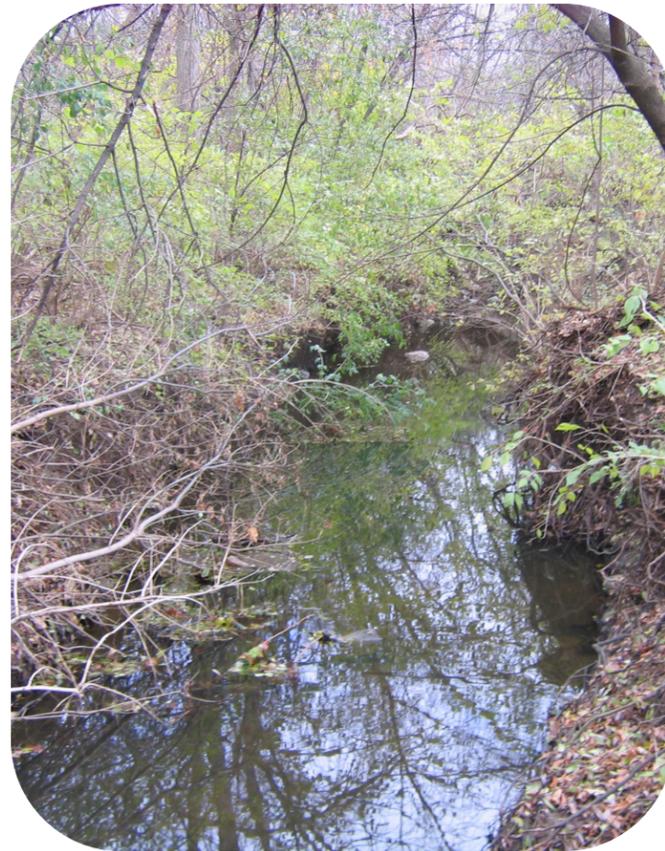
Successes and Challenges

Successes

- Since 1995, citizens in the Malletts Creek Association have been working to prevent further deterioration of the creek. In 1999, Ann Arbor, Pittsfield, and the Drain Commissioner (now Water Resources Commissioner) formed the Malletts Creek Coordinating Committee and developed a creek restoration strategy.
- Creek partners have invested millions of dollars in large-scale restoration projects including Malletts Creek Library (2004), Mary Beth Doyle Park wetland restoration (2006), Malletts Creek Streambank Restoration along several stream sections (2012), and Buhr Park Children's Wet Meadow installations (ongoing since 1997).
- The City of Ann Arbor instituted a stormwater utility (with built-in stormwater reduction incentives) and a no-phosphorus fertilizer ordinance following studies of Malletts Creek.
- Investments in stormwater and restoration projects have improved flow dynamics in the stream and reduced phosphorus loading.

Challenges

- Malletts is an urban creek. Stormwater runoff from lawns, parking lots, and roads have created *E. Coli*, phosphorus, conductivity, and habitat problems. As a result, the biological community of the creek has suffered.
- Sedimentation from years of runoff and erosion has collected in South Pond at the mouth of Malletts Creek., resulting in excessive vegetation and limiting recreation. This area is in need of restoration.
- The best way to maintain watershed health overall is through compact development in urban areas and preservation of open spaces in rural areas. Since Malletts Creek flows through an urban city, communities and residents will need to concentrate on mitigating the impacts of runoff and sedimentation described in this report and make Malletts as free-flowing and stable as possible by building green roofs, rain gardens, porous pavement, native landscaping, and a host of other "green infrastructure" stormwater management methods.
- Several studies have identified additional stormwater retrofit and Green Infrastructure opportunities that will continue to improve conditions in Malletts Creek, but space is limited. Flooding is also a problem in upstream areas.



Malletts Creek flows through a dense shrubby riparian zone where it crosses South Main Street. Credit: HRWC

What you can do!

At home

- If you live adjacent to Malletts Creek, leave a vegetated buffer strip adjacent to the waterway—ideally a suite of native plants, 50 feet wide.
- Minimize your turf lawn. Instead, install a raingarden and plant deep rooted native plants, in order to reduce runoff from your property.
- If you have pets, clean up after them and dispose of their waste properly. Pet waste left on the ground can contribute bacteria to the stream.
- Don't use phosphorus fertilizer. The City of Ann Arbor law and Michigan State law prohibit application of phosphorus fertilizer without a soil test to prove that the phosphorus is needed.
- Get involved! Join the Malletts Creek Association or take part in public advisory meetings for the many projects in Malletts Creekshed.



Protecting the river since 1965

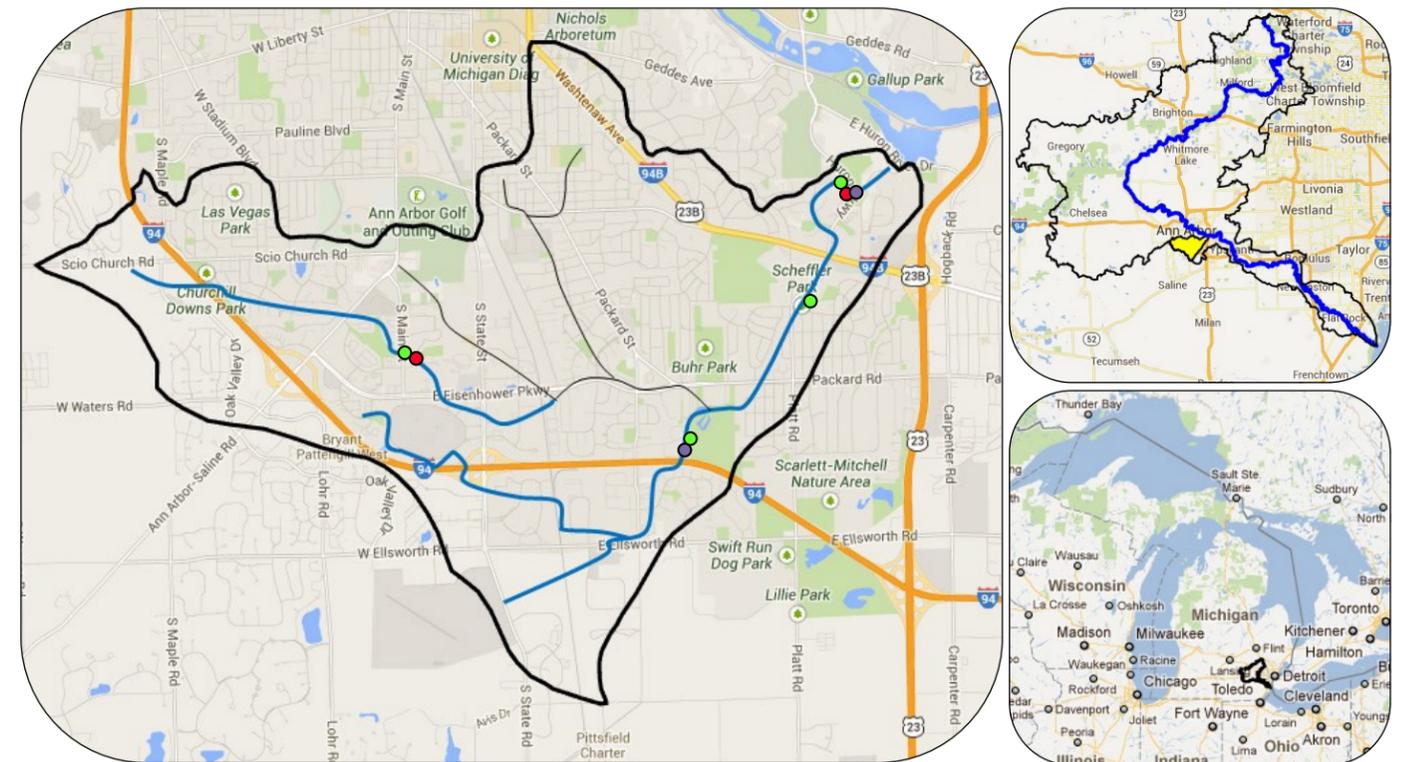
Malletts Creekshed Report

www.hrwc.org/malletts

Creekshed Profile

In 1839, the Gazetteer of Michigan described, "Mullet's creek, an insignificant stream, running...three miles below the village of Ann Arbour." The name "Malletts Creek" appears on a map that predates the founding of Ann Arbor in 1824, but the actual name origin is unknown. Malletts Creek was considered to be in the countryside, flowing through various farms and fields as well as the former city of East Ann Arbor. In the last fifty years, the watershed was been subject to extensive development, including two large malls (Briarwood and Arborland). Subdivisions, apartments, and other commercial areas have also been built, and today the Mallett's Creek watershed is a substantial part of the City of Ann Arbor. Smaller pieces of the watershed also fall in Ann Arbor, Lodi, and Pittsfield Townships. The Washtenaw County Water Resources Commission is also responsible for the creek as it is a designated drain.

Malletts Creek is composed of 10 miles of opens streams, and it drains about 11 square miles of land. Several miles of the creek are disconnected from the main branch as they have been put underground into pipes. Malletts Creek flows into the 50 acre South Pond which then empties into the Huron River. South Pond is shallow and becoming a wetland as it fills with sediment. The creek's average slope is 20 feet per mile, which is slightly above average for the Huron River watershed as a whole (average is 16 feet per mile). With the exception of South Pond, there are no lakes (open water > 5 acres) in Malletts creekshed, but there are several ponds (open water < 5 acres) in the creekshed, which are used for stormwater retention.



- Monitoring sites for Aquatic Insects, Stream Habitat, and Stream Temperature
 - Monitoring site for Stream Flow, Phosphorus, Total Suspended Solids, and *E. coli*
 - USGS Stream gages
- For more details on these parameters, please see inside.
- Open channel — Pipe

Creekshed Status and Trends



Malletts Creek trickles down a rocky streambed near the mouth, at the intersection of Chalmers Road. Credit: HRWC

Creekshed Land Use

Malletts Creekshed is an urban environment.

Total creekshed size: 11 square miles
 Year 2000 land use:
 Agriculture: 2%, 0.22 square mile
 Residential & urban: 85%, 9 square miles
 Forest: 2%, 0.22 square mile
 Open: 7%, 0.77 square mile
 Wetland: 2%, 0.22 square mile

Total impervious surface: 40%, 4.4 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. Since 33% of the Malletts creekshed is currently impervious, this means that the biological and hydrological systems in the creek are negatively impacted.

Stream Habitat

Unstable and changing; but not a mucky stream

Flashy flows often cause streams to have tall, eroding banks, and Malletts Creek is no exception. Such flows also can tumble small and large rocks along the bottom of the creek and wash away woody debris and stream inhabitants. On the positive side, much of Malletts is surrounded by a thin riparian zone dominated by trees, and there is a low amount of fine sediment in the substrate. In mucky streams, fine sediment fills in hiding spaces between rocks and boulders.

Creekshed Natural Areas

The creekshed is nearly fully developed.

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. As most of Malletts creekshed is developed, it has very little natural lands left; only 8% of the creekshed (half of which are publicly owned, like Mary Beth Doyle and County Farm parks).

Dams & Barriers

Retention basins, numerous culverts, and underground pipes

Dams and barriers greatly change the pattern of stream flow and alter fish and insect habitat. There are many small barriers (like retention basins and undersized culverts) in Malletts Creek that slow down or cut off water flow. In an urban setting, retention ponds are necessary to prevent flash flooding in the creek. Road culverts are problematic; they constrict water flow and increase water speed, blocking fish movement and often increasing erosion downstream. Undersized culverts can cause flooding upstream of a culvert and can flood roads.

Fish Community

Not studied; it is likely poor to non-existent.

There are no known surveys of the fish in Malletts Creek. However, given the flashiness of the stream, the poor habitat conditions, and the numerous culverts restricting fish passage, it is likely that very few fish live in the creek.

Aquatic Insect Community

Very poor

Since Malletts is an urban creek with flashy flows and unstable habitat, the insect community is also very poor. Total diversity is very low when compared to more natural streams. HRWC only finds stream creatures here that are ubiquitous (found everywhere, in good streams and bad); in particular net-spinning caddisflies, scuds, isopods, and midges.

Stream Water Temperature

Cool, with occasional warm spikes

Malletts Creek is sourced primarily by surface runoff, though it receives a small amount of groundwater. Temperature measurements show that the water temperature normally ranges between 70 and 80 degree during July and August, and the highest recorded temperature was 88 degrees. This is a slightly high temperature for a creek of this size in this area of Michigan. If there was a fish population in Malletts, this water temperature would be stressful to fish on the hottest summer afternoons, but would not be a problem on regular summer days.

Conductivity

High

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 a useful indicator of potential problems. Conductivity levels in Malletts Creek are well above natural background levels—some of the highest in the watershed—indicating the presence of an unknown amount of pollutants.

Phosphorus

Elevated, but declining

Phosphorus is the limiting nutrient in most freshwater systems, and too much phosphorus can cause algal blooms and water quality problems. The target for area streams is < 50 µg/l. Malletts Creek's mean total phosphorus (TP) is 87 µg/l, which is elevated, particularly after heavy storms (see below). Stormwater runoff and erosion are the likely sources.

Color Coded Ranking

Excellent

Fair

Poor

Unknown

E. coli

Consistently high

E. coli bacteria is a useful water quality indicator for the presence of fecal contamination. In Malletts Creek, *E. coli* is present in high concentrations, which makes partial body contact unsafe (no drinking or recreational activities). Under all conditions, *E. coli* can reach levels that are well above state standards. Predominant sources are wildlife and pets. Human sources have also been detected.

Total Suspended Solids

Low

Total suspended solids (TSS) is a measurement of the amount of sediment and organic material held by the stream. A high TSS indicates high turbidity and erosion problems. Good TSS values during rain storms are below 80 mg/l. Malletts Creek's mean TSS is 18 mg/l.

Stream Flow

Flashy flow dynamics

Stream flow is an important underlying factor for determining likely erosion rates, stream habitat quality, and aquatic community diversity. An important measure is "flashiness" or the rate a stream rises and falls through a storm event (see below). Malletts Creek has a flashiness rating that is high for comparable Michigan streams, and more flashy than most in the Midwest.

