



Protecting the river since 1965

# Davis Creekshed Report

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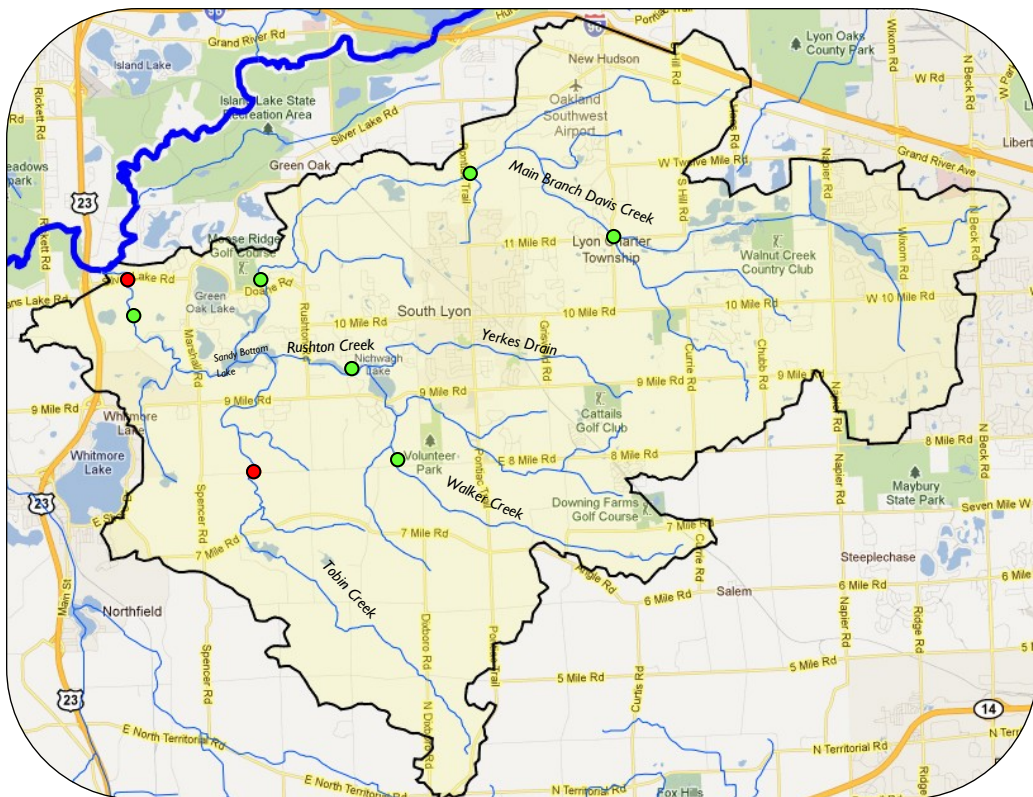
## Creekshed Profile

Davis Creek flows through land enriched by glaciers with deep deposits of sand and gravel. Its watershed is one of the largest in the Huron River, draining 57 square miles. The creek's gentle slope (averaging 6 feet per mile) is one of the flattest in the Huron watershed, resulting in a meandering creek with numerous ponds and lakes. There are 34 lakes (open water > 5 acres) and 85 ponds (open water > 5 acres) in the Davis creekshed.

The townships of Green Oak, Lyon, Northfield, Salem; cities of South Lyon and Novi; Livingston County Drain Commissioner; and the Oakland and Washtenaw County Water Resources Commissioners all make decisions that affect the creek. Due to the numerous jurisdictions in the creekshed many of the branches have numerous names.

In 1855 Ann Davis and her husband William Osborne leased ½ acre of their land on Silver Lake Road to build the original Green Oak Township Hall. From 1891 to 1924 farmers petitioned their county's Drain Commissioners to drain the creekshed's wetlands for farming. Numerous small gravel pits were dug in the northern half of both Green Oak and Lyon Townships around 1915. By 1927, this area had the largest sand and gravel operation in the country. Gravel extraction continues today, but on a far smaller scale.

While most of this creek lies in rapidly developing areas, Davis Creek is one of the highest quality streams in the Huron River watershed. It is lovely to canoe on the lower stretches, where endangered species of fish and mussels are thriving. The creek is one of only three creeks in the Huron River watershed with special status as a State Natural River Zone (from the outlet of Sandy Bottom Lake to the Huron River).



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

For more details on these parameters, please see inside.

● Monitoring site for Stream Flow, Phosphorus, Total Suspended Solids, and E. coli

# Creekshed Status and Trends



In stream plants and woody debris offer plenty of habitat variety at this site on Doane Road. Credit: Cheryl Tabacki

## Creekshed Land Use

### *Encroaching impervious surface*

Total creekshed Size: 57 square miles  
Land use based on the year 2000:  
Agriculture: 41%, 23 square miles  
Residential & urban: 9%, 5 square miles  
Forest: 9%, 5 square miles  
Open: 32%, 19 square mile  
Wetland: 9%, 5 square miles

Total impervious surface: 12% , 7 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 12% of the Davis creekshed is currently impervious, this means that the system is at the tipping point of losing much of its biological diversity.

## Creekshed Natural Areas

### *Many natural lands yet unprotected*

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 25% of the creekshed remains as intact natural areas. However, almost none of these areas are protected from development. Without designated protection, the natural areas of the creekshed 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

*Lower Main Branch excellent; upper Main Branch and tributaries poor to fair*

This large, branching creek has a range of habitat conditions. The main branch downstream of Pontiac Trail is in excellent shape. However, the upper portions of the creekshed are dominated by fine sediment that chokes out the living spaces of aquatic creatures. Specifically, the main branch upstream from Pontiac Trail is in poor shape, with many channelized creeks draining from farm fields, golf courses, and subdivisions.

## Dams and Impoundments

### *Present, but do not dominate the system*

While dams provide recreational benefits, they greatly alter a stream's hydrology, and degrade fish and insect habitat. The major dam in the Davis creekshed created Nichwagh Lake, a 130 acre impoundment. Nichwagh Dam was once used for hydropower but its only function now is to maintain the lake level for recreational purposes.

## Mussel and Fish Community

### *A wealth of rare species*

Davis Creek has 12 species of unionid mussels, including the endangered snuffbox mussel, the state listed wavy-rayed lamp mussel, and three other species of special concern. Smaller species and suckers compose most of the fish community, including blacknose dace, creek chub, mottled sculpin, rainbow darters, and hognose suckers. The state listed threatened eastern sand darter has been found in Davis Creek.

## Aquatic Insect Community

*Excellent at the mouth; otherwise fair throughout but declining*

Where Davis Creek meets the Huron River, the aquatic insect population is very healthy, and the creek contains several sensitive insect types. In the other 5 sampling areas across the creekshed, the insect community is average for streams of this size. However, long term data have shown the insect populations on 4 of these 5 sites have declined in the last 10 years.

## Stream Water Temperature

### Cool water

Davis Creek receives a mix of cold groundwater and warmer surface runoff. Much of the stream is shaded by natural riparian areas. Temperature measurements show that the water temperature of Davis Creek rarely gets above 75 °F and rarely drops below 60 °F during July and August. This is a normal water temperature for a creek with these properties and in this area of Michigan.

## E. coli

### Safe for contact

*E. coli* bacteria is a useful water quality indicator for the presence of fecal contamination. In Davis Creek, *E. coli* is normally present in low concentrations that permit partial body contact (no drinking, but recreational activities are fine). However, little data is available, so be cautious. Limit contact up to 48 hours after heavy rain events.

## Phosphorus

### Moderate, with exceptions (Tobin Creek)

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 < 30 µg/l. Davis Creek's mean total phosphorus (TP) near it's outlet is 32 µg/l, which is slightly elevated. Tobin Creek averages 90 µg/l. HRWC is currently investigating sources. Storm event runoff does not significantly affect phosphorus concentrations in Davis Creek.

## Color Coded Ranking

Excellent

Fair

Poor

## 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; Davis Creek's is 5 mg/l.

## Conductivity

### Slightly elevated

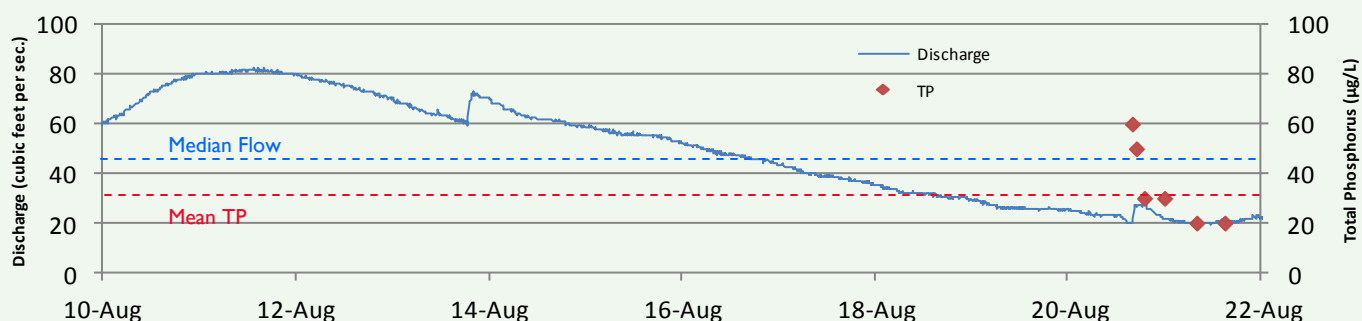
Conductivity is a measurement of the amount of ions (also known as salts) dissolved in water. Conductivity is a quick and easy measurement to make, and is useful as an indicator of potential problems. Conductivity levels in Davis Creek are slightly above natural background levels, indicating the presence of some amount of unknown pollutants.

## Stream Flow

### Natural 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). Davis Creek has a flashiness rating that is low or more natural than comparable Michigan and Midwestern streams.

## 2010 Storm Event Graph 0.38 inch of rain fell on August 20.





## Successes & Challenges

### Successes

- In 1977, Michigan designated parts of Davis Creek as a Natural River Zone (as is a major portion of the Huron River itself). This designation aims to reduce bank erosion and retain the scenic appearance of the stream banks by restricting the location of new buildings and the clearing of trees and other vegetation. Green Oak Township has extended this protection to all creeks in that Township.

- Several local policies have been passed to protect Davis Creek. Notably, Green Oak, Salem and Lyon Townships, and South Lyon have stormwater and wetland ordinances. Also, Green Oak township has a riparian buffer ordinance.

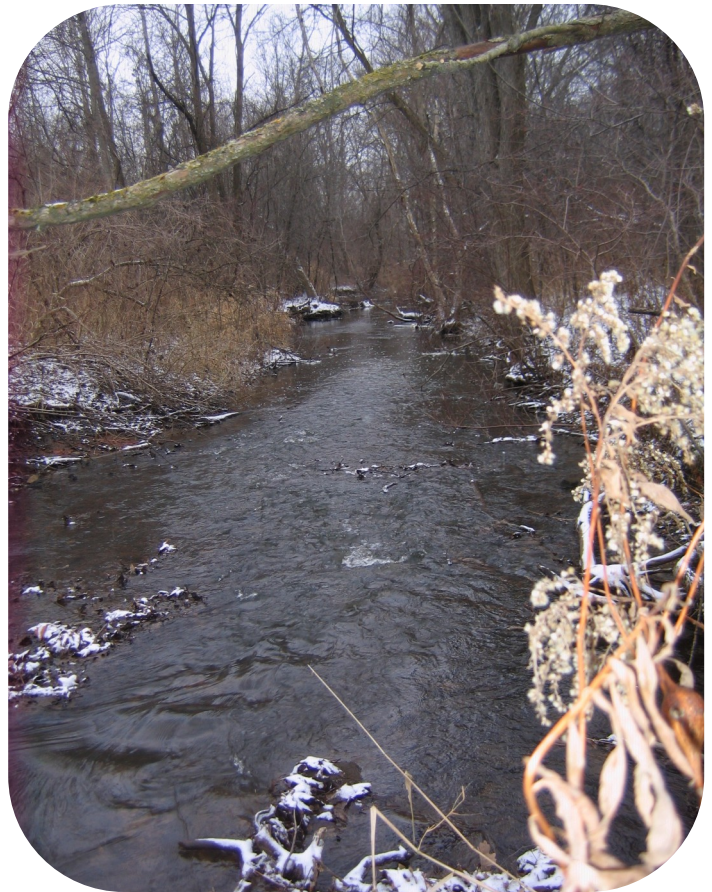
### Challenges

- Davis creekshed's communities and residents must promote compact development and preserve natural areas. It is extremely important to prevent more impervious surface in order to maintain the creek's integrity.

- The number of jurisdictions over the creek makes it very challenging to institute protective measures for the entire creek.

- The aquatic insect communities are declining at the study sites on Davis Creek. There is no obvious reason for why this is occurring. The probable culprit is a slow but steady increase of non-point source pollution; pollution that comes from our yards, cars, roads, and many other sources that cannot be traced to specific locations. River friendly land use management and storm water control are essential in combating non-point source pollution.

- Nearly all of the existing natural areas in the creekshed are under private ownership and designated for some kind of development. If the creekshed loses these wetlands and forests, (it will lose the ecosystem services they currently provide) or (the creek will suffer further impacts from non-point source pollution).



Many areas of Davis Creek run through beautiful, riparian forests.  
Credit: Max Bromley

## What you can do!

### At home

- Minimize your turf lawn; instead put in deep rooted native plants that do not need to be fertilized or watered.
- Have your septic system checked regularly. Leaking septic systems can be a large source of phosphorus and *E. coli*.
- If you manage horses or livestock, install fencing or other exclusions to keep them out of the streams. A vegetated buffer will also reduce erosion and keep their waste from washing into streams.
- If you own property with a natural area, work with a land conservancy to establish an easement to protect it from future development.

### In your community

- Learn to identify environmental impairments like algal growth in waterways and erosion on land—and follow up with HRWC when you see something wrong.