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# Allen Creekshed Report

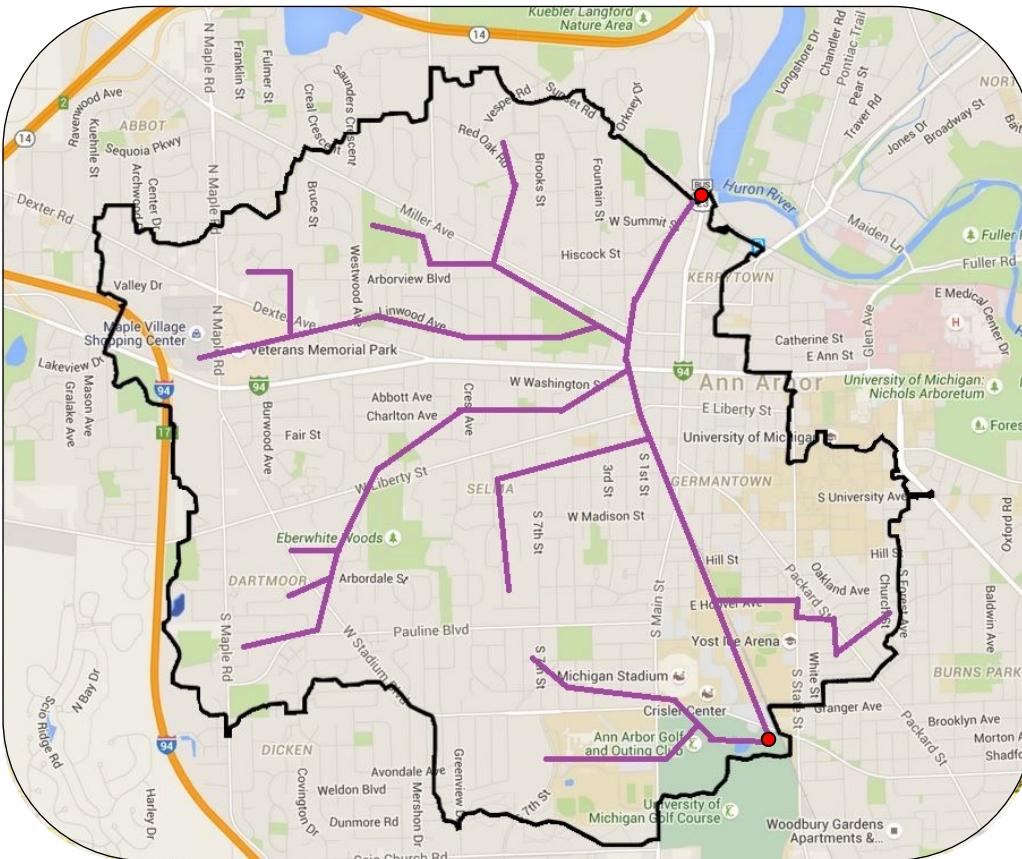
[www.hrwc.org/allen](http://www.hrwc.org/allen)

## Creekshed Profile

Allen Creek is named after John Allen, one of the original landowners in the area that is currently the City of Ann Arbor. John Allen, along with his partner Elisha Rumsey, named the city "Annarbour" after their wives who were both named Ann. Allen went on to become the town's newspaper publisher, postmaster, and village president. Initially, Allen Creek was used as a drinking water source and for sewage disposal, as well as by tanneries, breweries, mills, and other small industries. By 1885, the Ann Arbor Water Works Company had formed to provide central water and sewer. Like all streams, Allen Creek was prone to meander and flood, and in 1926, the city put Allen Creek into underground pipes upon petition of the streamside businesses. Its primary purpose became that of rain water conveyance.

Yet piping Allen Creek caused new problems. As Ann Arbor continued developing to the west, the amount of runoff channeled into the drain kept increasing to the point where the pipes were over their capacity. The city decided to repair the present system to make it as efficient as possible. Ann Arbor voters approved a \$1.1 million bond issue, and in 1983 the city set to work repairing deteriorated culverts, relocating other utilities' pipes that crossed the drain, and resurfacing bottom areas that had eroded.

Presently the Washtenaw County Resource Commissioner's Office, city staff, and HRWC continue to work together on routine maintenance, green infrastructure projects, and public education efforts. Major projects are financed with the city's storm water utility fees. Periodically, people talk about opening up portions of the drain and returning it to a natural creek. Current discussion is focusing on the potential of creating a Greenway along the downstream portion of the creek corridor.



— Approximate location of main storm sewer lines

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



Google Maps



For more details on these parameters, please see inside.

# Creekshed Status and Trends



Allen Creek outfall into the Huron River, shortly after 3 inches of water fell on June 15, 2015. credit: Ken Anderson



Allens Creek outfall into the Huron River, one day after the June 2015 storm shown on the left. credit: Ken Anderson

## Creekshed Land Use

### *High impervious surface*

Total creekshed Size: 5 square miles

Land use based on the year 2000:

Residential & urban: 96%, .49 square miles

Forest: 1%, .07 square miles

Open: 2%, .1 square mile

Wetland: .05%, .002 square miles

Total impervious surface: 55% , 2.85 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. With 55% of the creekshed currently impervious, the system would not support much biological diversity, even if it was not almost entirely underground.

## Creekshed Natural Areas

### *Few natural lands*

Forests, wetlands, and grasslands soak up rainwater and runoff, filter pollutants from the creek, and provide wildlife habitat and beautiful places for us all to enjoy. Allen is within the City of Ann Arbor and therefore mostly consists of neighborhoods, businesses, and institutional uses. In fact, only about 50 acres still consist of intact natural areas (in parks like Eberwhite Woods and Miller Nature Area). In this urban creekshed, it will be important to maintain natural features like trees, pocket parks, plantings, riparian buffers throughout the community to help soak up rainwater.

## An Underground Stream

Prior to 1926, Allen Creek was a normal above ground stream. Since then, it has been buried in a pipe system, and is not truly a creek but rather a branching storm-water drain system. This was originally done to allow building development and improve drainage. The pipe system does not support a biological community such as fish, insect, and mussels, although the occasional fish has been seen swimming up the pipes from the Huron River.

## Water Flow and Flooding

### *Flashy water flow and floods are common after heavy storms*

An important measure of water flow is “flashiness”, or the rate a stream rises and falls through a storm event. Allen Creek is extremely flashy. Rain is quickly directed into the storm sewers of Allen Creek and released to the Huron River as a rapid torrent.

The storm sewer system is not large enough to handle all of the water entering the system at once after large storms, and the rainwater backups into the city streets. There are particular areas in Ann Arbor that regularly flood. These areas include State Street near Yost Arena, 5th Ave near Fingerle Lumber, and Depot Street near the Huron River.

## Phosphorus

*High*

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. Allen Creek's mean total phosphorus (TP) near its outlet is 90 µg/l, which is the highest concentration of all tributaries to the middle Huron River.

## E. coli

*High*

*E. coli* bacteria is a useful water quality indicator for the presence of fecal contamination. In Allen Creek, *E. coli* is present in high concentrations, which makes partial body contact unsafe (no drinking, or recreational activities). After heavy rain events, *E. coli* can reach levels that are well above state standards in the creek and in the river immediately downstream of its outlet at Argo Dam.

## Conductivity

*Highly 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 Allen Creek are above natural background levels, indicating the presence of some amount of unknown pollutants.

## Total Suspended Solids

*High*

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. Allen Creek's mean is 14.10 mg/l, however it has been as high as 197.60 mg/l following storms.

## Color

Excellent

Fair

Poor

Unknown

## Coded Ranking

## Water Temperature

*Varies depending on weather conditions*

The outlet of Allen Creek at the Huron River has the lowest mean temperature of all monitored tributaries in the Middle Huron. It averages just under 17°C through the summer, but with a wide range from 7 to 25°C. This low temperature is likely due to the creek being buried underground.



Allen Creek (lower left) ran next to Dean and Company's oil and gas storage building. Dean and Company was an important part of Ann Arbor at the turn of the century and through the mid 1900's. credit: permission granted through the Bentley Historical Library.

## Successes & Challenges

### Successes

• The City of Ann Arbor has invested over a million dollars in the Allen Creek watershed to mitigate problems caused by the pipe system and lack of water treatment. Here are some of these projects:

- Hydrology improvements, water quality treatment and habitat improvement in West Park (see [www.hrc.org/allen](http://www.hrc.org/allen)).
- Massive underground detention, water quality treatment and groundwater infiltration at Pioneer High School.
- Reconstruction of 4th Avenue downtown included 100% groundwater infiltration.
- Reconstruction of Miller Avenue included extensive roadside stormwater capture and infiltration (rain garden cells).
- Reconstruction of Madison Avenue included infiltration swales.

### Challenges

- Allen is an urban creek. Stormwater runoff from lawns, parking lots, and roads picks up E. Coli, phosphorus, and salts, and oil. As a result, the water released to the Huron River has a low water quality.
- During and following large rain storms, the Allen Creek watershed continues to suffer from areas of extensive flooding. The flooding impacts the Huron River and property alike. The creekshed will require many more acres of stormwater storage to alleviate this problem.
- In order to maintain overall Huron watershed health, it is important to have urban areas like the City of Ann Arbor. This will enable natural areas and rural lands across the Huron watershed to remain as open land, and therefore the overall Huron River will remain healthy. However, this does mean that urban creeks must have the burden of assimilating all the runoff and pollution associated with highly urban areas. Green Infrastructure like rain gardens, permeable pavement, green roofs, and other elements are necessary to minimize negative impacts.



Allen Creek flood in 1902 as it crosses Washington Street.

## What you can do!

### At home

- Minimize your turf lawn. Instead, plant deep rooted native plants and tree that do not need to be fertilized or watered.
- Create a raingarden: [www.ewashtenaw.org/raingardens](http://www.ewashtenaw.org/raingardens). Direct downspouts and runoff to natural areas or garden to soak up and clean the water.
- 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 which proves additional phosphorus is needed.
- Adopt your storm drain at [www.hrc.org/volunteer/adoptastormdrain/](http://www.hrc.org/volunteer/adoptastormdrain/)
- Use less salt on sidewalks and driveways.

### In your community

- Support Green Infrastructure in your neighborhood.
- Encourage the community to do regular street sweeping in order to prevent dirt and waste from entering Allen Creek.