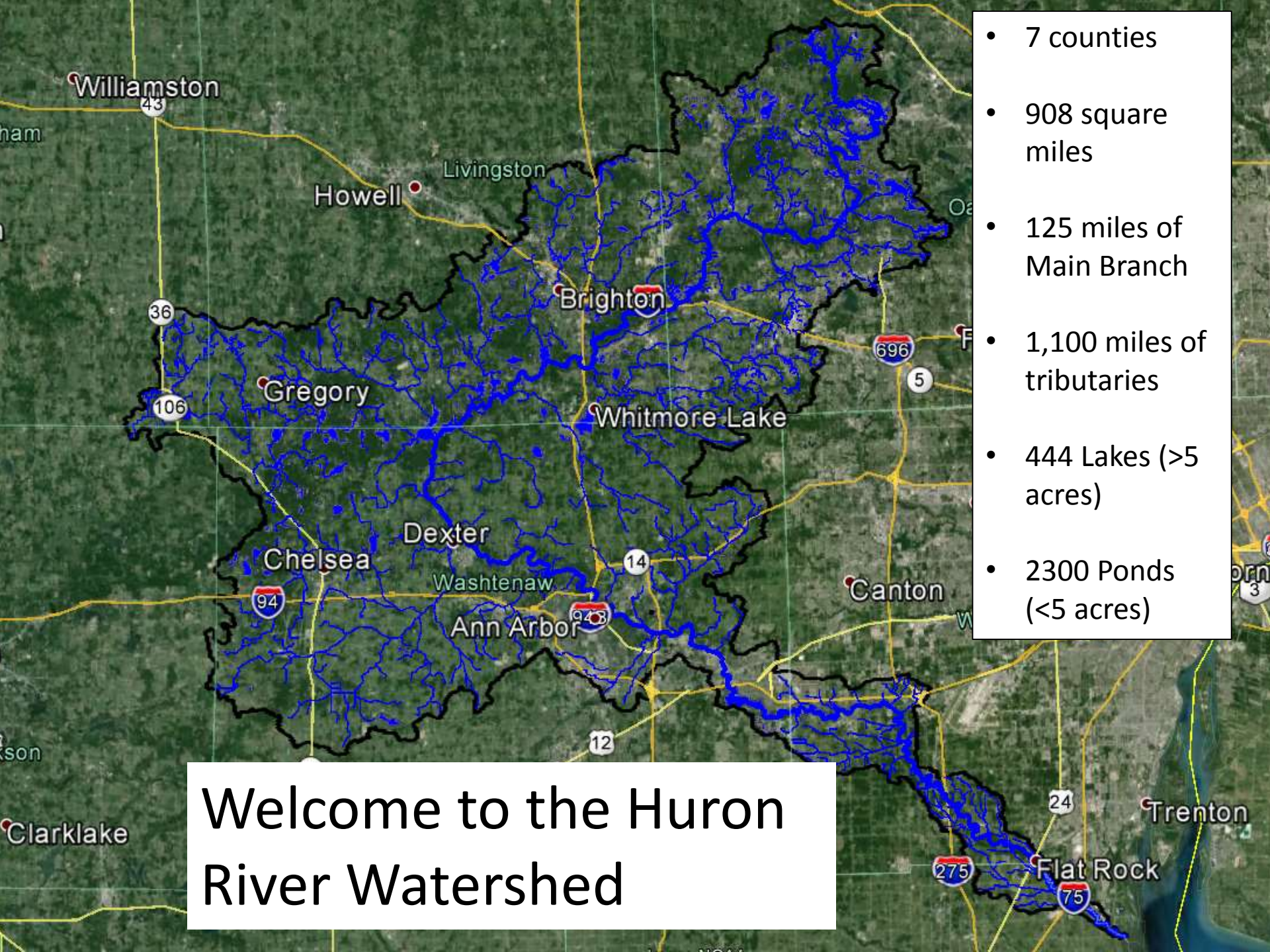


The State of the Huron's River and Tributaries

Paul Steen

The State of the Huron
Conference
April 24, 2014





- 7 counties
- 908 square miles
- 125 miles of Main Branch
- 1,100 miles of tributaries
- 444 Lakes (>5 acres)
- 2300 Ponds (<5 acres)

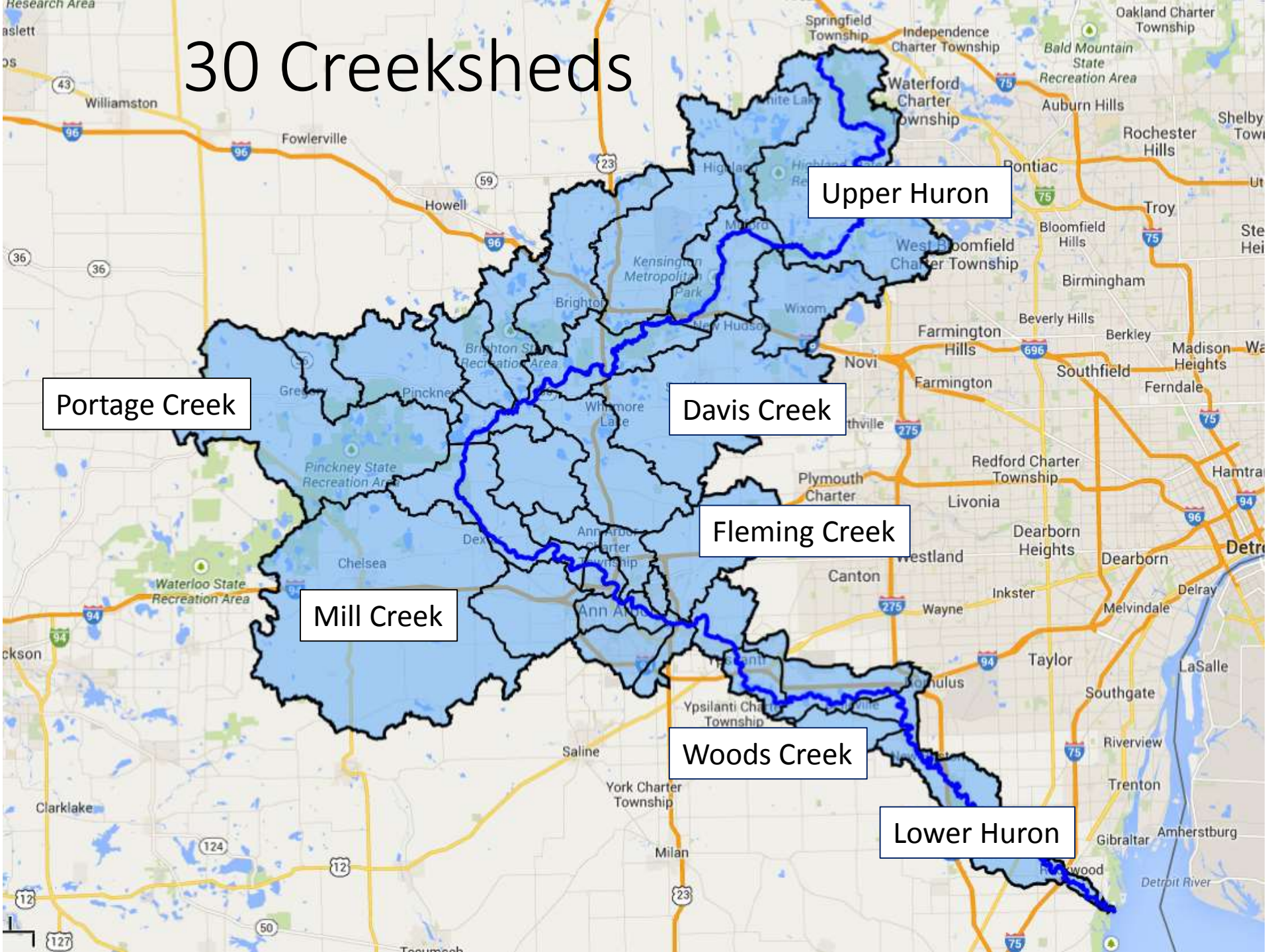
Welcome to the Huron River Watershed

A satellite map of the Huron River Watershed in Michigan. The river is highlighted in blue, showing its extensive network of tributaries. Major roads like I-275 and I-75 are visible. Labels for 'Williamston', 'Milan', 'Flat Rock', 'Clark', 'son', and 'ham' are scattered across the map.

Objectives:

- To assess the current health of the riverine system in the Huron River Watershed
 - At a creekshed scale
 - Based on a suite of 10 parameters.
- To highlight successes and challenges over the past 5 years.
- To assess the State of the Huron.

30 Creeksheds



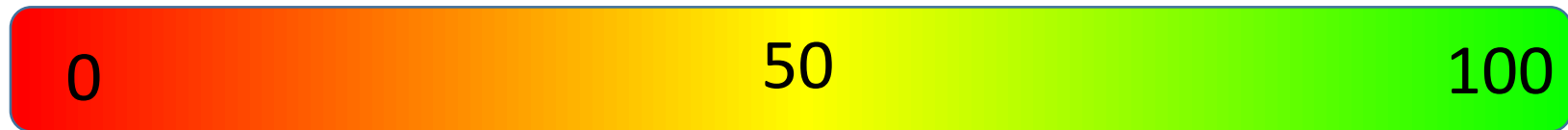
10 Indicators of Stream Health

1. Land use/natural areas
2. Stream Habitat
3. Fish Community
4. Benthic Community
5. Stream Temperature
6. E. Coli
7. Phosphorus
8. Conductivity
9. Total Suspended Solids
10. Stream Flow

Each Parameter is Scored:

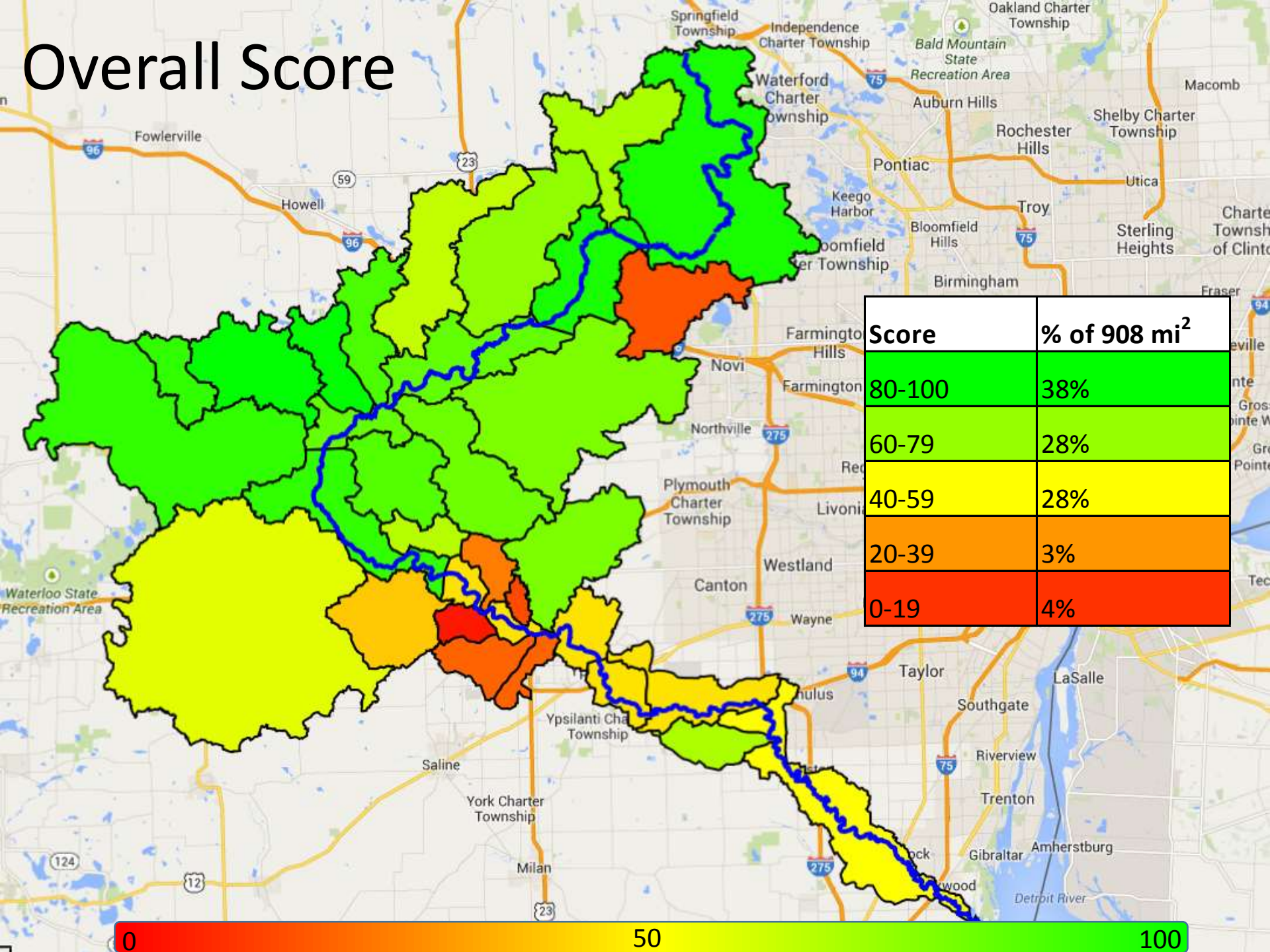
Poor (0) Fair (5) Excellent (10)

Scores are summed:

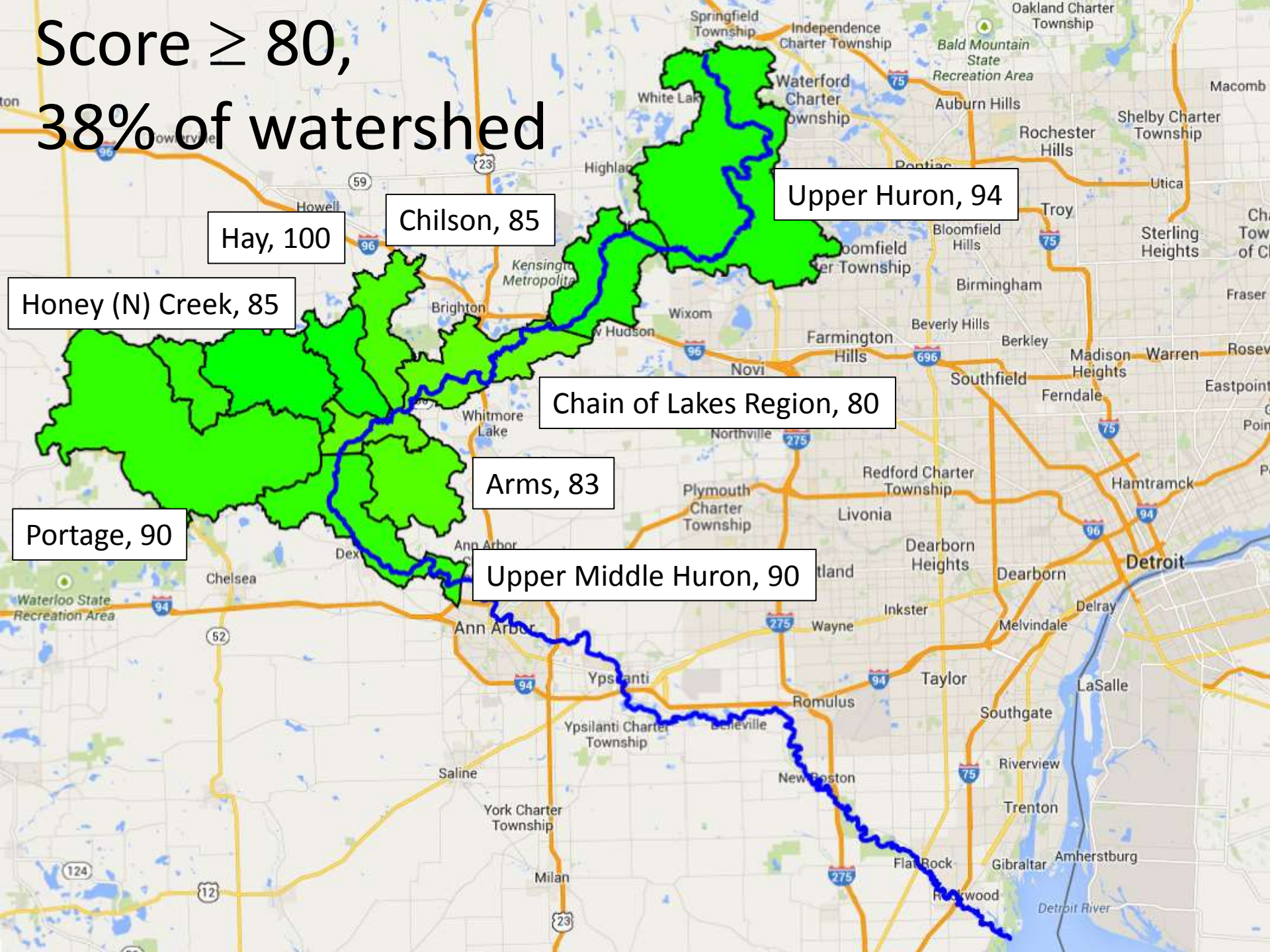


Scores from creeksheds with missing data are scaled so that their score still ranges 0-100

Overall Score

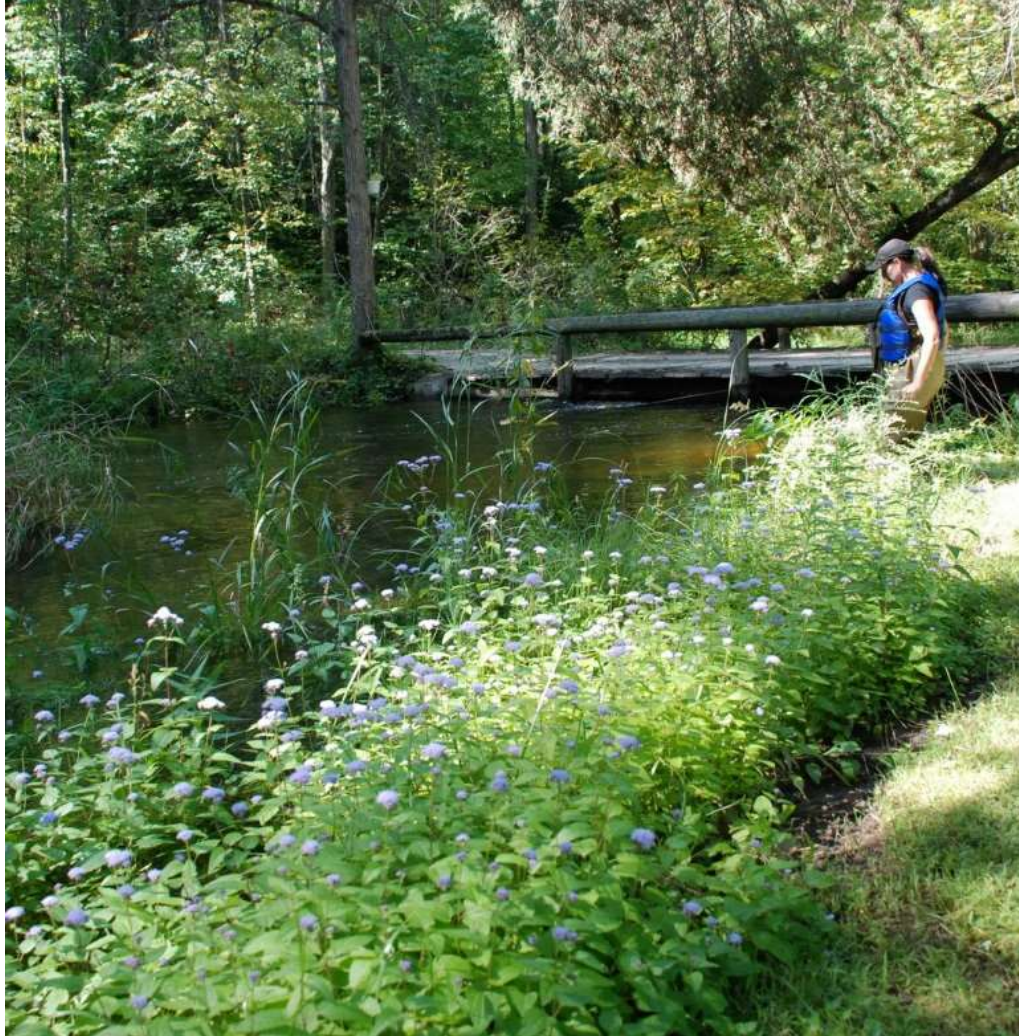


Score ≥ 80 ,
38% of watershed



Recent Highlights

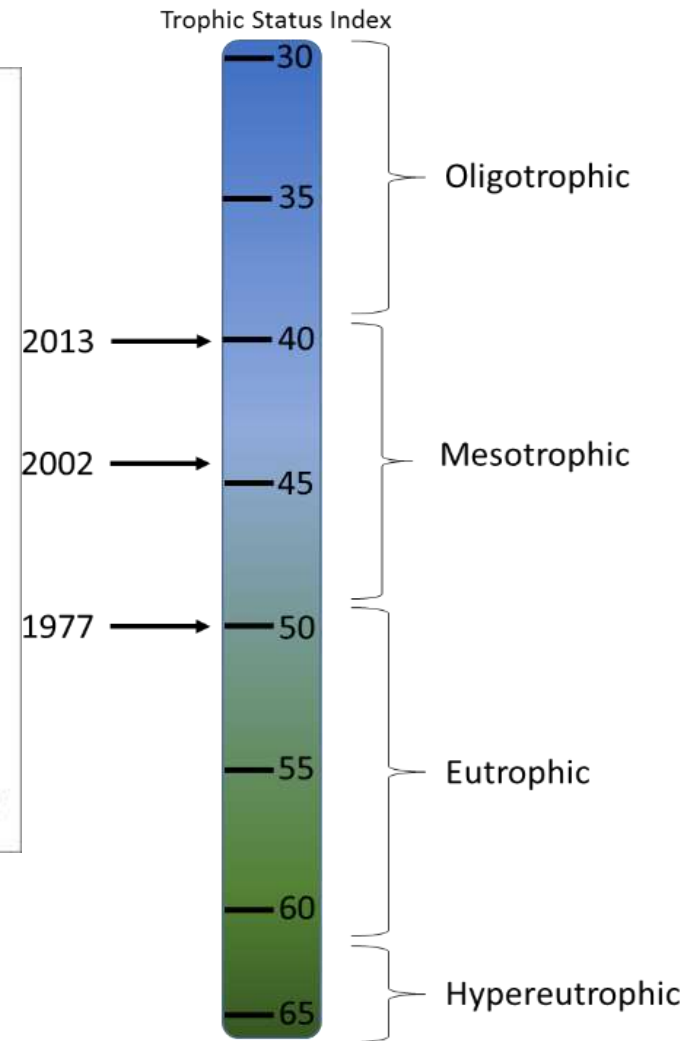
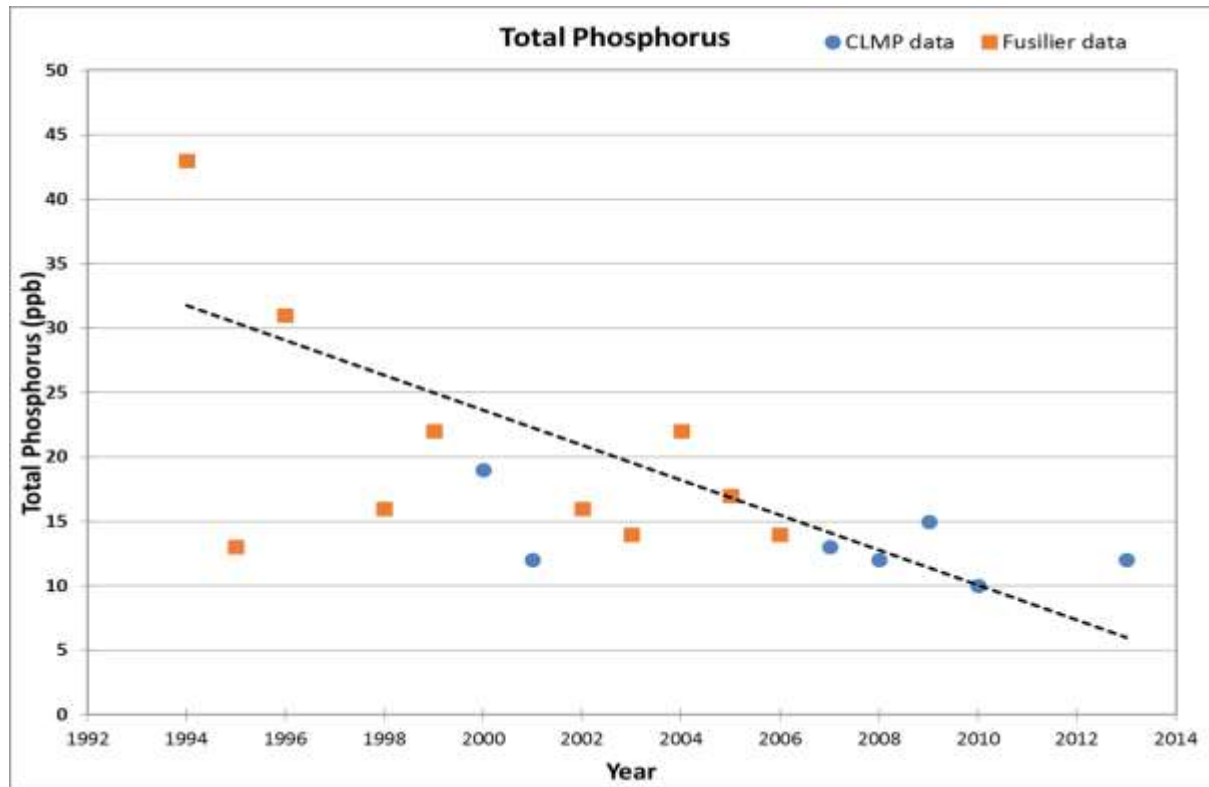
Portage Creek



- Safeguarding this creekshed by preventing degradation
- A watershed management plan focused on protection.
- Implementing the Plan
 - Green Infrastructure Planning
 - Improving Local Ordinances
 - Educating Residents

Recent Highlights

Chain of Lakes–Baseline Lakes

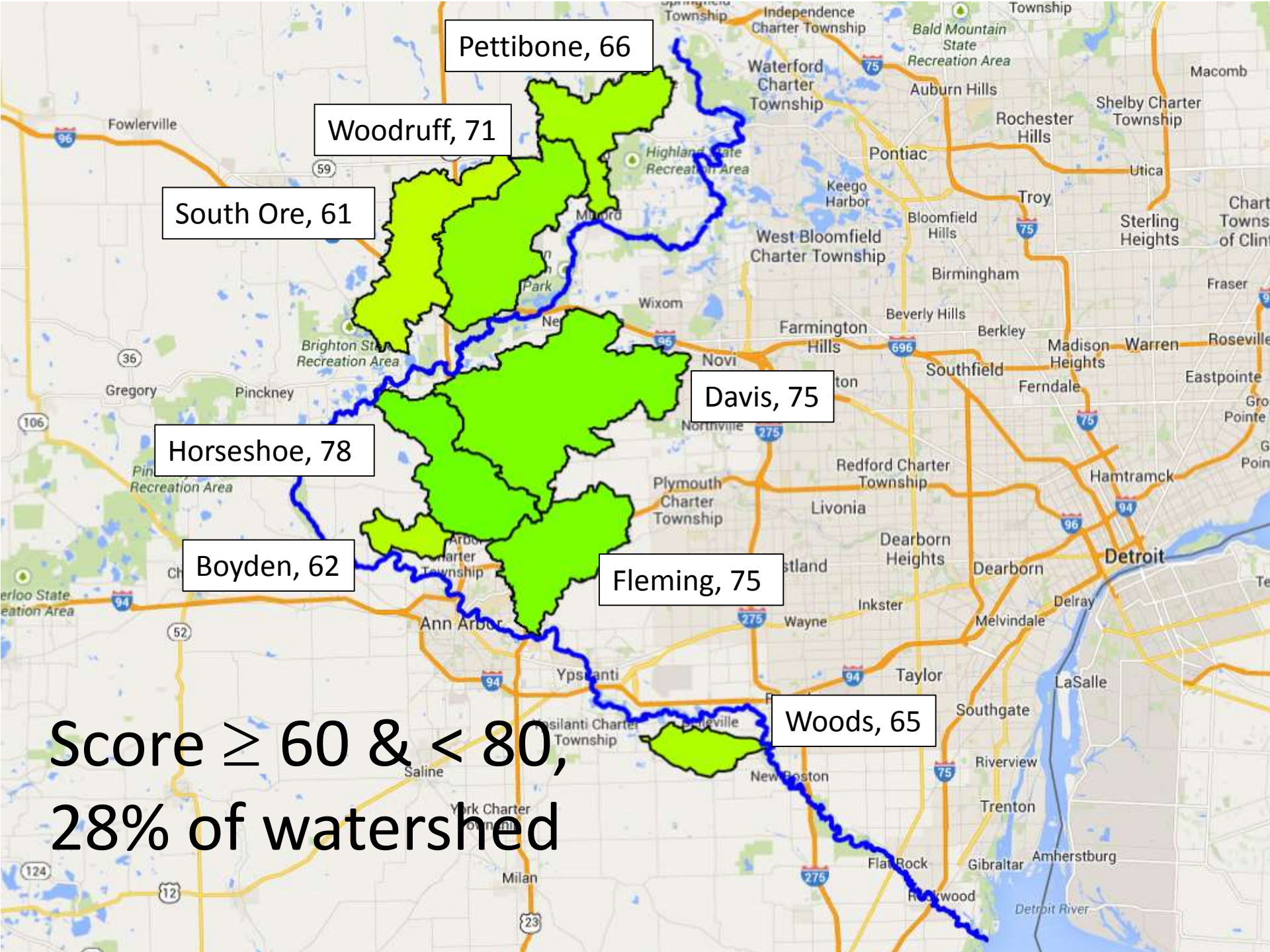


Recent Highlights



Arms Creek land preservation

- 3,400 acres of land have been protected from development by:
 - Greenbelt Program
 - Legacy Land Conservancy
 - Independence Park
 - Webster Township
- Part of the creek is in a State Natural River Zone; Webster township has expanded protection to the entire creek.



Pettibone, 66

Woodruff, 71

South Ore, 61

Horseshoe, 78

Boyden, 62

Davis, 75

Fleming, 75

Woods, 65

Score ≥ 60 & < 80 ,
28% of watershed

Recent Highlights

Fleming Creek Happenings

- Re-establishment of the Fleming Creek Advisory Council
- Bank stabilization projects and stream restoration work.
- Radrick Farms and Fox Hills Golf Courses
- Lands protected by Ann Arbor's Greenbelt program (450 acres since 2006).
- The northwest area of Fleming Creek has the second best macroinvertebrate population in the Watershed.

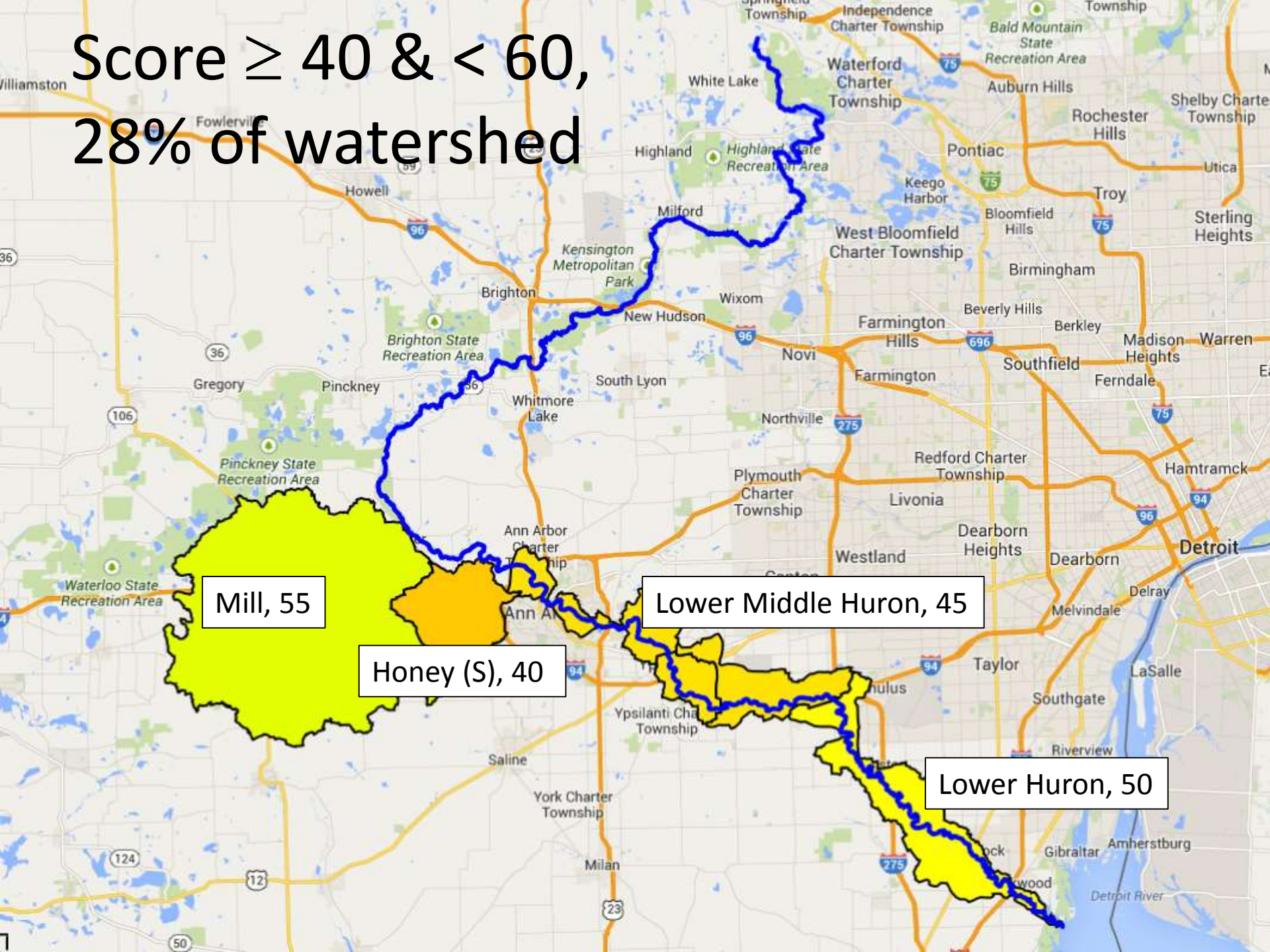


Recent Highlights

Dedicated to Horseshoe Creek- Korinne Wotell

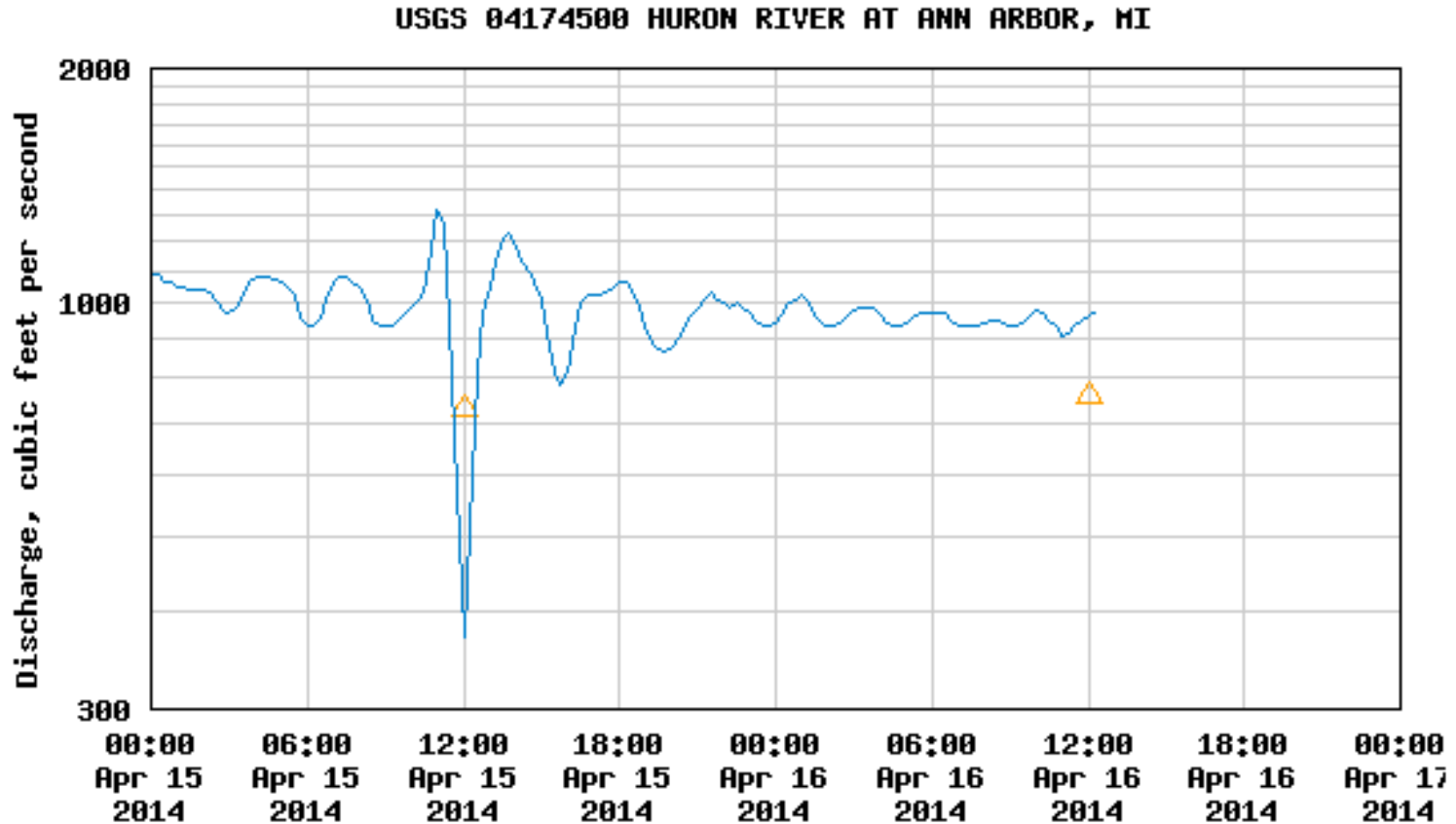


Score ≥ 40 & < 60 ,
28% of watershed



Ongoing Issue

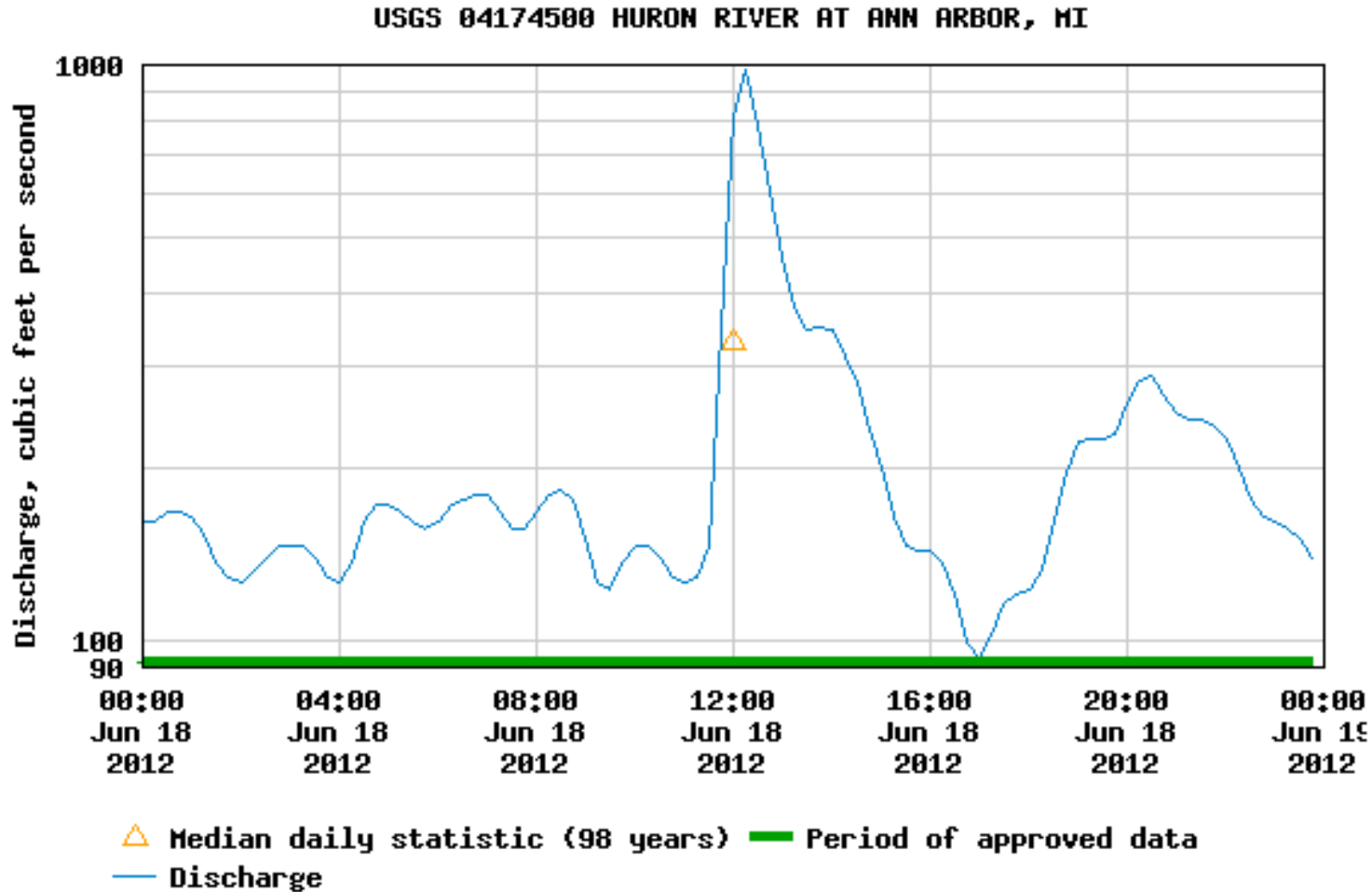
Main Branch Dams and Disrupted Flow Regimes



---- Provisional Data Subject to Revision ----

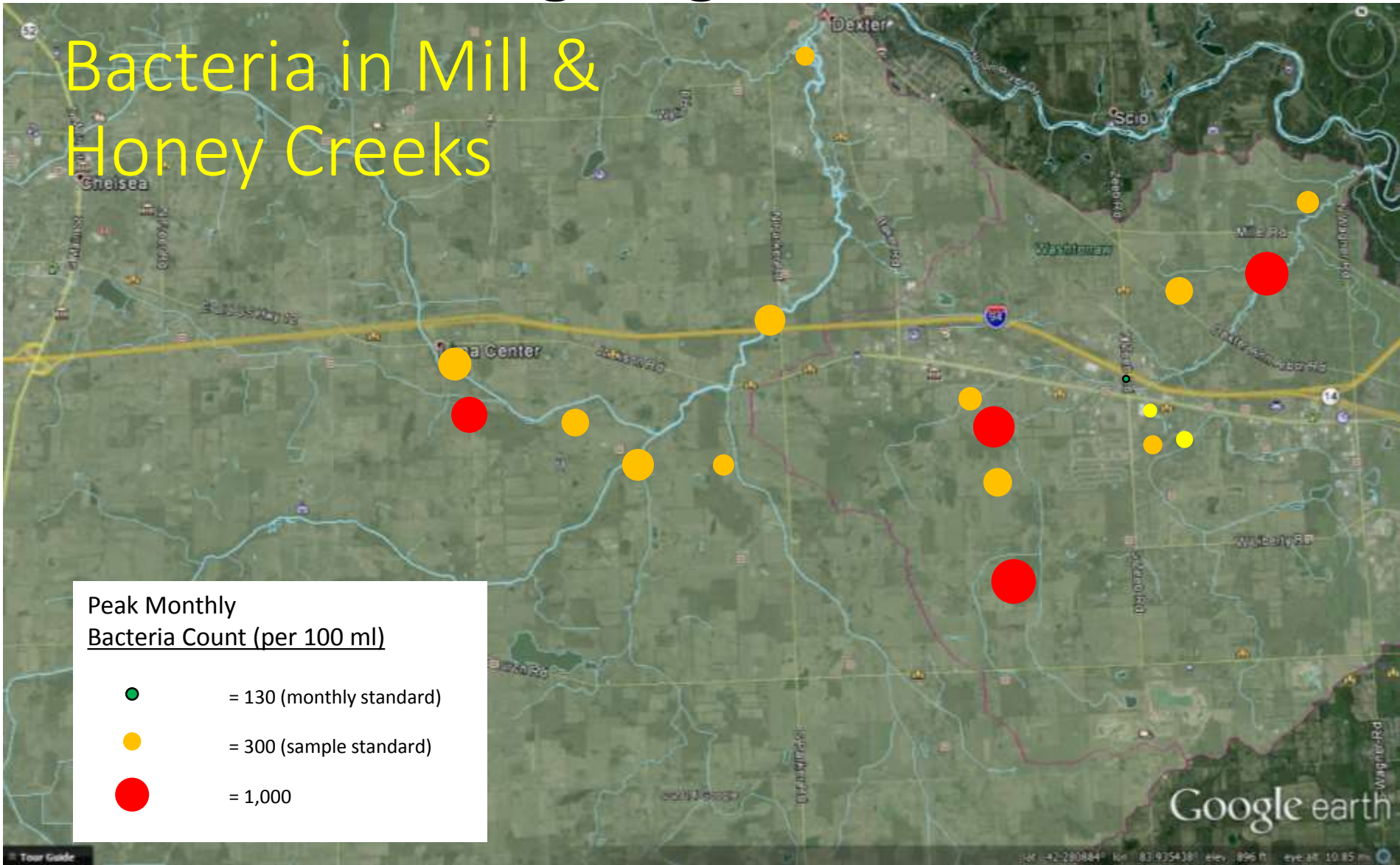
Ongoing Issue

Main Branch Dams and Disrupted Flow Regimes



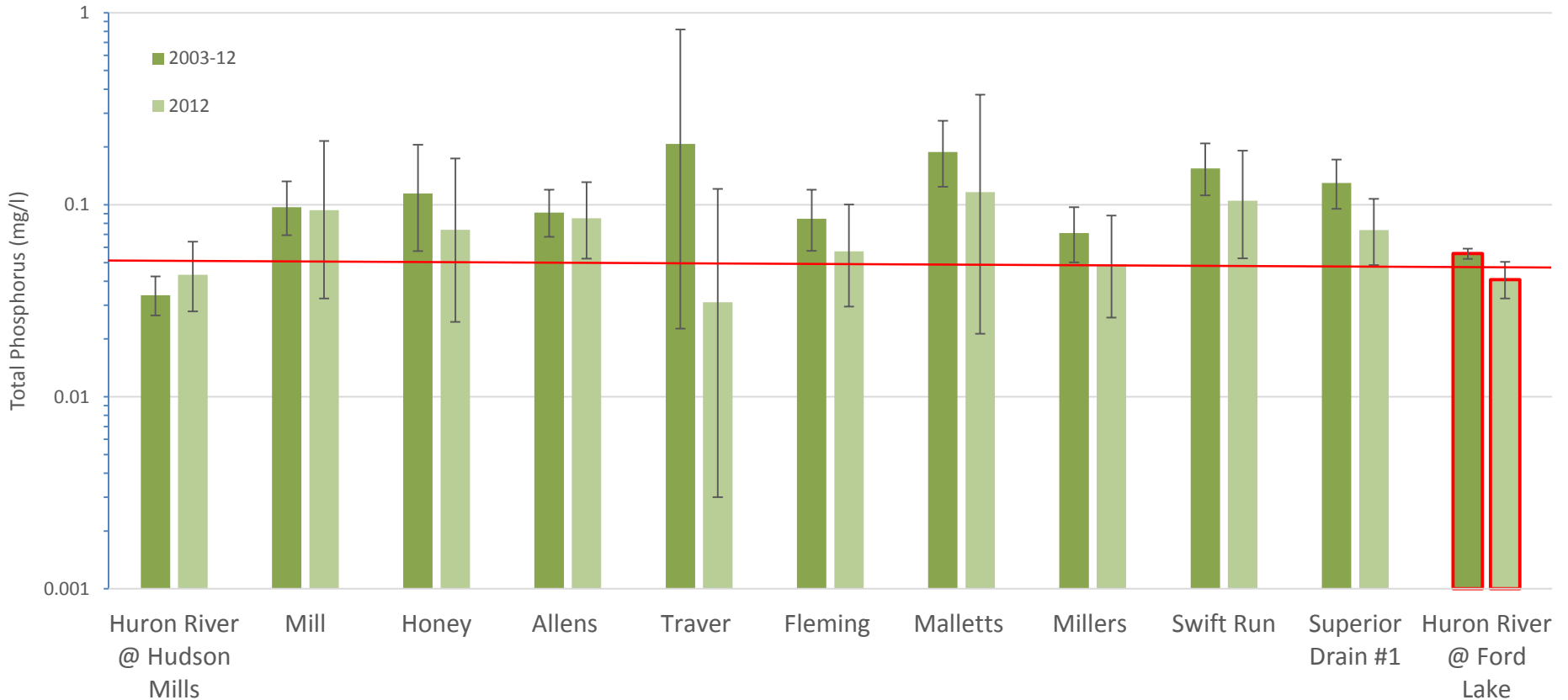
Ongoing Issues

Bacteria in Mill & Honey Creeks



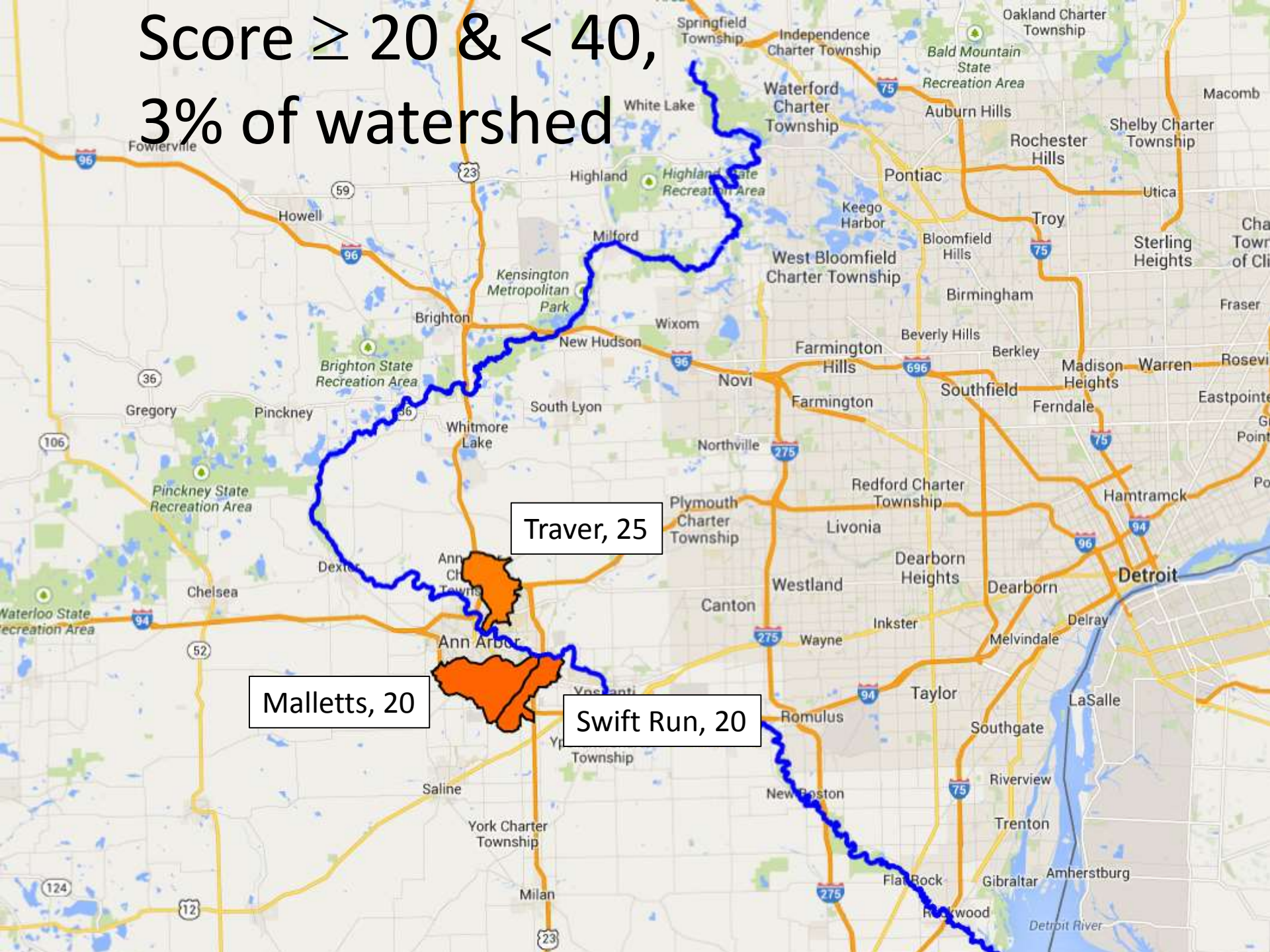
Ongoing Issues

Phosphorus in the Middle Huron



Bars show flow-weighted mean total phosphorus at 11 monitoring stations for the entire monitoring period (2003-12) and the most recent calculated year (2012). The red line is the target concentration of 0.05 mg/l.

Score ≥ 20 & < 40 ,
3% of watershed



Recent Highlights

Malletts Creek Restoration

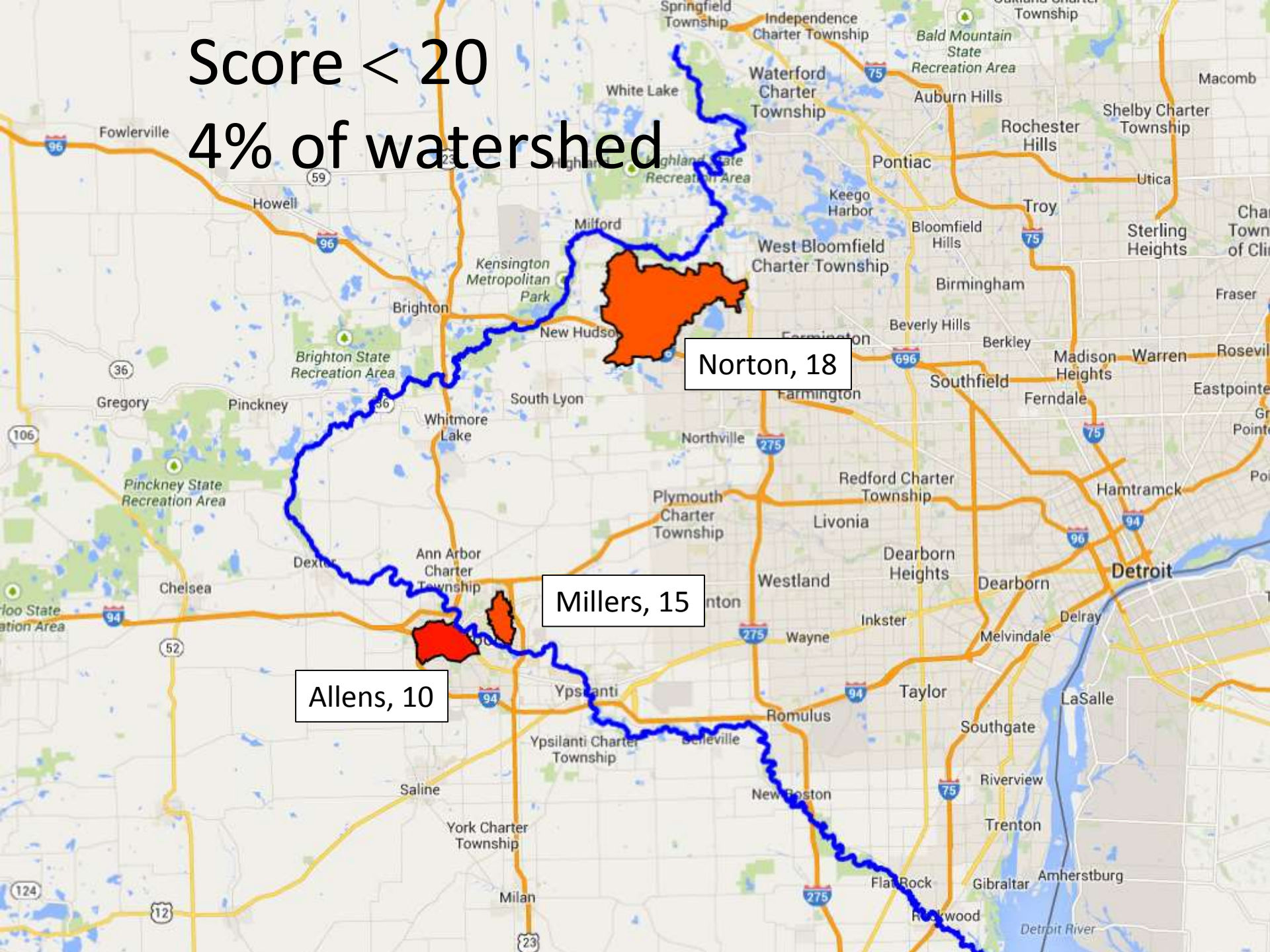


Stream reshaping at County Farm Park

Holding back stormwater and fixing erosion:

- 1) Malletts Creek Library (2002)
- 2) Mary Beth Doyle Park wetland restoration (2006)
- 3) Malletts Creek Streambank Restoration (2012). Many places including high profile project at County Farm Park.
- 4) Buhr Park Children's Wet Meadow (ongoing since 1997)

Score < 20
4% of watershed



Recent Highlights

Millers Creek Stormwater and Erosion



5/20/09

Recent Highlights

Millers Creek Stormwater and Erosion



7/22/10

Ongoing Issue

Norton Creek Degradation



Channelized section of Norton Creek


- A creekshed with a long history of channelization, residential development, and industry.
- **Poor Scores in:**
 - Dissolved Oxygen
 - Phosphorus
 - Conductivity & TDS
 - Land use
 - Aquatic Insect Community
 - Fish
 - Flashy Water flow

Creekshed Analysis is valuable...

1. Gives a process for HRWC staff with different focuses to put their heads and data together.

2. Can point out areas where we need to know more.

3. Can give a good overall picture of watershed health while pointing at specific problems.

 **Huron River Watershed Council**
Healthy life and place
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 means 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 feet.

There are 7 lakes (open water > 5 acres) in the Arms creekshed. The biggest lake, Independence Lake, is 190 acres, and approximately 40% 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

Huron River Watershed Council, 1100 North Main Street, Ann Arbor, MI 48104, (734) 769-5123, Updated 2013

Creekshed Status and Trends



Stream Habitat
Excellent riparian and instream habitat in some places; muddy 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.

Parts of Arms Creek have a "face 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 miles
- Wetland: 1%, 0.2 square miles

Total Impervious surface: 15% 2.4 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. Only 3.5% of the Arms creekshed is currently impervious, and as the creek enjoys the benefits of the natural water cycle.

Dams and Impoundments
Absent

While dams provide recreational benefits they greatly alter a stream's hydrology, and can degrade fish and insect habitat.

Fish Community
Cool-water fish community

The Michigan DNR stocked Arms Creek with brown trout in the 1990s, 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, fathead darter, large-mouth bass, and white sucker. Other members of the sunfish family are also here in large numbers (green sun-

Creekshed Natural Areas
Many natural lands yet to be protected

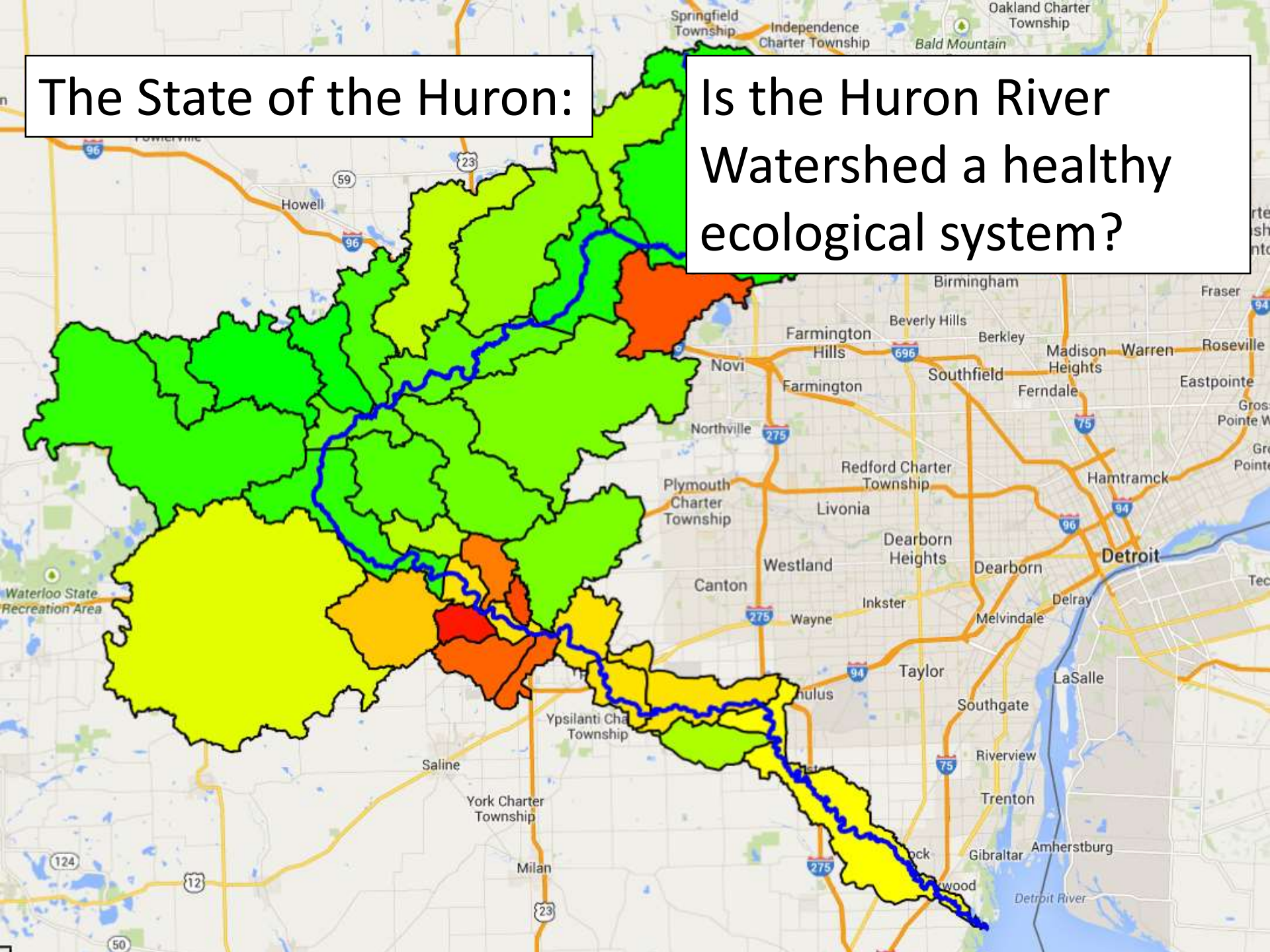
The creekshed's forests, wetlands, and grasslands soak up rainwater and runoff, filter pollutants from runoff, and provide wildlife habitat and beautiful places for us all to enjoy. About 35% of the creekshed has natural areas. However, only a small fraction of these areas are protected from development (about 6% of the watershed, including Independence Lake county park). The vast majority (65%) of the creekshed's natural areas has an uncertain future. It will be important to keep these lands natural, so they can continue to help keep the creek healthy.

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 wetland 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.

The State of the Huron:

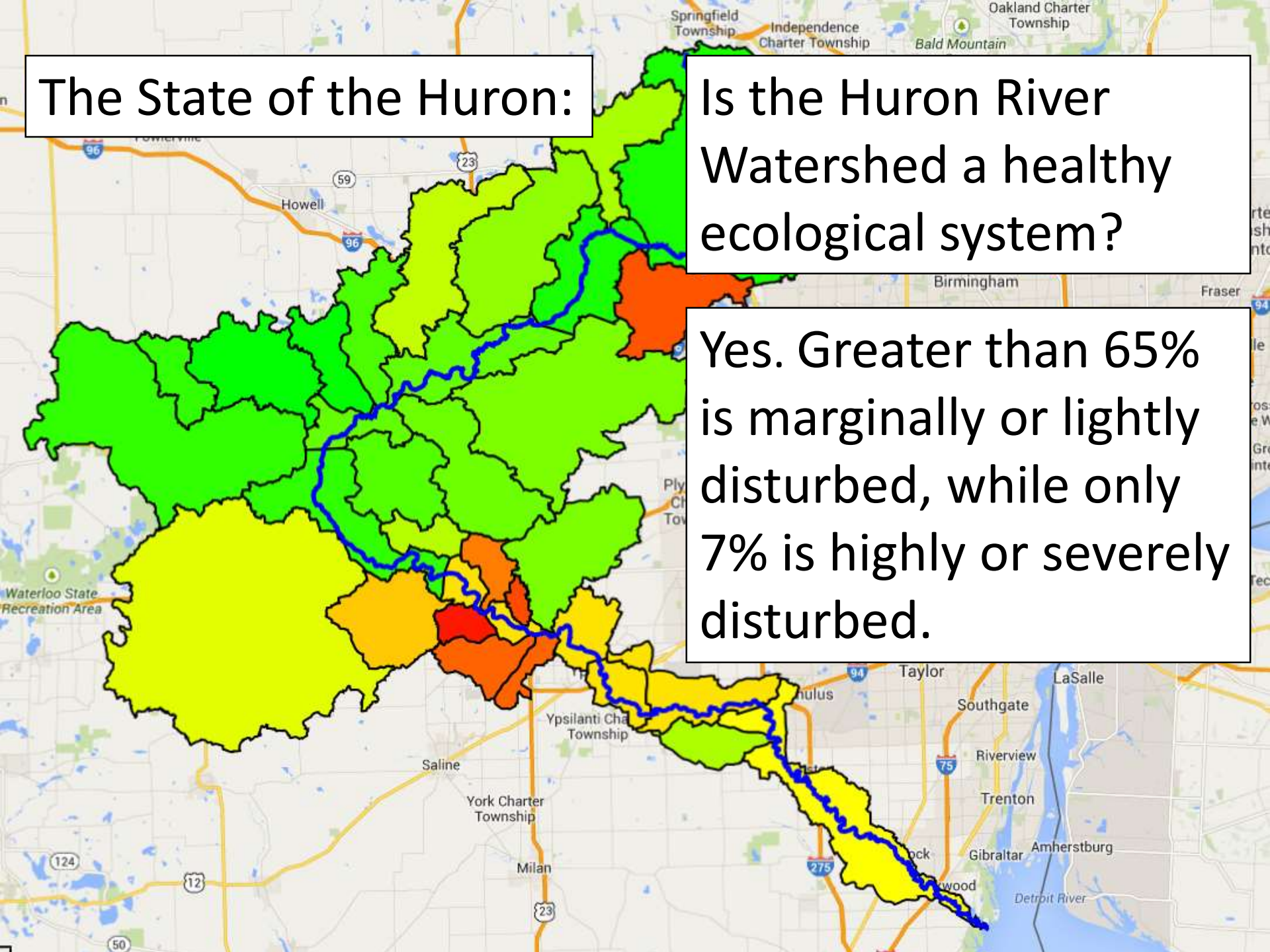
Is the Huron River Watershed a healthy ecological system?



The State of the Huron:

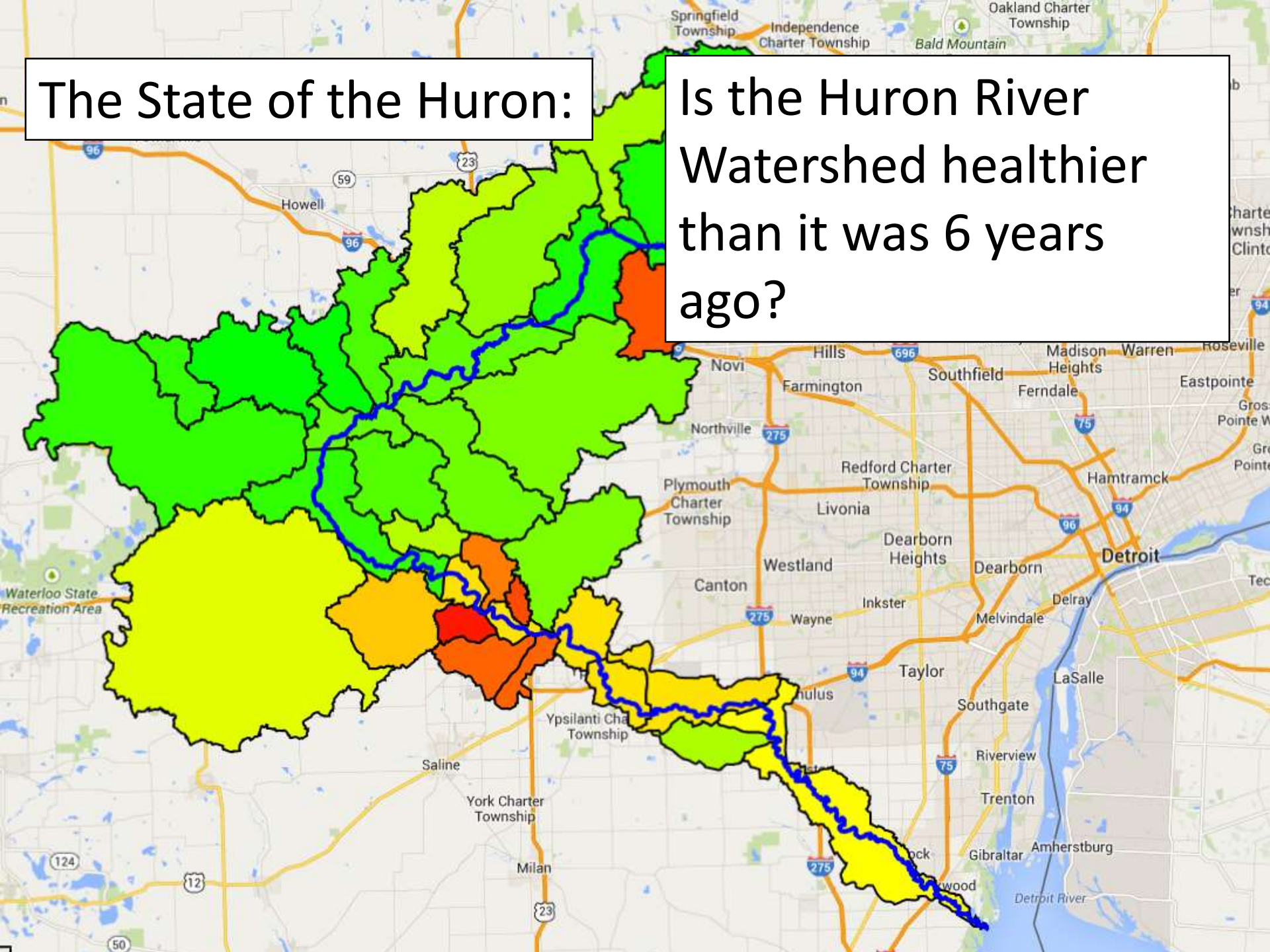
Is the Huron River Watershed a healthy ecological system?

Yes. Greater than 65% is marginally or lightly disturbed, while only 7% is highly or severely disturbed.



The State of the Huron:

Is the Huron River Watershed healthier than it was 6 years ago?





The State of the Huron:

Is the Huron River Watershed healthier than it was 6 years ago?

Yes. Impacts have remained the same or diminished, while numerous partners are making improvements in many places.