

2024 BioMonitoring Report

On behalf of the Alliance of Downriver Watersheds, **the Huron River Watershed Council and the Wayne County Dept. of Public Services, Water Quality Management Division** conduct benthic macroinvertebrate sampling in the fall and spring of each year. Staff and volunteers visit rivers and creeks across the Downriver region and collect samples of the critters that live in the stream and on the streambed.

"Benthic macroinvertebrates" are another word for stream insects, crustaceans, worms, and mollusks. The word "benthic" refers to the bottom of a lake or stream, the word "macro" means they are large enough to see with the naked eye, and "invertebrates" are creatures without backbones.

Benthic macroinvertebrates are good indicators of water and habitat quality because they live in the water year-round and are exposed to all of the stressors and threats that the stream faces, such as chemical pollution, high and fast water flow, and erosion.

2024 Summary

In 2024, HRWC and Wayne County sampled macroinvertebrates in the ADW 23 times, continuing the monitoring program that began in the mid-2000s.

The primary story that can be told from this data is that **most ADW streams have degraded water quality and habitat conditions due to heavily urbanized environments**. Streams regularly rank "Fair" or "Fairly Poor" according to the MiCorps scoring scheme (described below) which is indicative of low dissolved oxygen conditions and channelized habitat.

There are a few locations that are quite healthy! The best example of this is Woods Creek, a tributary to the Huron River that flows through the Lower Huron Metropark. Pollution-sensitive insects are regularly found here, and the habitat is varied which provides different living conditions for different types of creatures.

A user of this report can scan through the rankings in the table below, looking at the number of total insects and number of sensitive insects found at each location. Locations with sensitive insects- like Woods Creek, or Brooks Creek, will have the best water quality. Locations with the highest number of total insects, like Blakely Drain, will have the most varied habitats.

Understanding the numbers

HRWC and Wayne County use four different metrics of benthic macroinvertebrates to rate the benthic community. The first three of these metrics are calculated by the number of families in a sample. A "family" is a taxonomic term that indicates a type of macroinvertebrate (for example, it is possible to find about 10 different mayfly families in our area of Michigan). In general, the more families found, the healthier the stream.

- 1. **All insects:** This metric is a count of all insect families in the sample. It serves as a general indicator of stream health and habitat diversity in particular.
- 2. **EPT:** Standing for Ephemeroptera-Plecoptera-Trichoptera, this metric is a count of all mayfly, stonefly, and caddisfly families in the sample. These insects are sensitive to water temperature and oxygen availability. Stagnant or warm streams will not have many of these families.
- 3. **Sensitive:** There are 21 insect families found in SE Michigan that are particularly sensitive to organic pollution (i.e. fertilizers, animal and human waste). This metric is a count of those insect families. While up to six or seven of these families might be found in a single sample from very healthy streams in SE Michigan, they are very rare in the ADW.

MiCorps Water Quality Rating (WQR)

The MiCorps WQR is the fourth metric used to determine benthic population quality. This rating is one used by all stream monitoring groups involved in the Michigan Clean Water Corps Program (<u>www.micorps.net</u>), thus it is a statewide measure and used to compare Michigan streams. WQR is an index of biotic integrity (IBI) measure that is essentially a weighted average of insect pollution tolerance values, ranging from 0 to 10. A score of 0 is extremely healthy and a 10 is highly degraded.

The abundance of macroinvertebrates plays into this score as well. It is expected that any particular sample should have between 100-150 macroinvertebrate specimens to give the most accurate score. However, in highly degraded streams collecting this many is not always possible as populations will be low. Samples with very low abundances will essentially break the math of the MiCorps WQR and usually result in a higher score than the stream should have. Thus, if a collection comes back with less than 30 specimens it is automatically given a 10, and a collection with less than 60 specimens is automatically given a 7.

Trends: Trends are determined by simple linear regressions of the sample year vs. the four metrics described above. If at least two of the eight regressions (4 for fall, 4 for spring) are significant at the alpha level of 0.1 and trending the same direction, the trend is noted. Six data points are required before a regression is calculated.

As HRWC and Wayne County have recently taken on the new MiCorps WQR scoring and simultaneously changed several sample sites, most sites do not have enough data yet to show trends and will not for several years.

Cruise the InfoStream

The next several pages of this report give the most recent BioMonitoring results, but HRWC also has an online mapping system where you can see the location of each monitoring site as well as graphs over time for each metric.

https://experience.arcgis.com/experience/b85de7c01c65458c8a545fbfff72d118/page/Benthic-Macroinvertebrates/

Sampling in 2024 Spring 2024

Site ID	Site Name	Abundance	# Insect Families	# EPT Families	# Sensitive Families	MiCorps WQR Score and Rating	Trend
CD-1	Frank and Poet: SAHS- West	77	8	2	0	6.2, Fair	Not enough data
CD-2	Frank and Poet: SAHS- East	192	7	1	0	6.4, Fair	Stable
CD-3	Brownstown Creek: Woodhaven Community Park	99	4	0	0	7.5, Poor	Not enough data
CD-9	Blakely Drain: Merriman Rd	127	12	3	0	6.8, Fairly Poor	Not enough data
CD-14	Blakely Drain: Racho Rd	88	8	0	0	6.1, Fair	Stable
EC-6	Ecorse Creek South: Millward Park	74	4	2	0	6.9, Fairly Poor	Stable
EC-7	Ecorse Creek North: RA Young Recreation Center	77	4	1	0	7.6, Poor	Possibly declining
HR-2	Woods Creek: Lower Huron Metropark	94	14	7	2	5.8, Fair	Stable
HR-3	Brooks Drain	105	9	3	2	5.9, Fair	Not enough data
HR-5	Regan Drain: Willows	64	7	1	0	5.8, Fair	Stable

	Metropark Interloop Rd						
HR-7	Silver Creek: King Rd	118	9	2	1	6.9, Fairly Poor	Not enough data

Fall 2024

Site ID	Site Name	Abundance	# Insect Families	# EPT Families	# Sensitive Families	MiCorps WQR Score and Rating	Trend
CD-1	Frank and Poet: SAHS- West	91	5	1	0	6.6, Fairly Poor	Not enough data
CD-2	Frank and Poet: SAHS- East	128	5	1	0	7.0, Fairly Poor	Stable
CD-3	Brownstown Creek: Woodhaven Community Park	91	4	0	0	8.0, Poor	Stable
CD-9B	Blakely Drain: Middlebelt Rd	115	11	1	0	6.1, Fair	Not enough data
CD-11	Blakely Drain: Vining Rd	168	16	3	1	6.8, Fairly Poor	Not enough data
CD-14	Blakely Drain: Racho Rd	83	2	0	0	6.3, Fair	Stable
HR-1	Silver Creek: Flat Rock Community Park	51	7	0	0	7.0, Fairly Poor	Stable
HR-2	Woods Creek: Lower Huron Metropark	89	12	3	1	4.8, Good	Stable
HR-3	Brooks Drain	53	7	2	0	7.0, Fairly Poor	Stable
HR-5	Regan Drain: Willows Metropark Interloop Rd	58	7	2	0	7.0, Fairly Poor	Stable
HR-9	Port Creek: Armstrong Road	272	12	1	0	6.1, Fair	Stable
HR-10	Huron River: Flat Rock Boat Launch	62	10	4	0	5.6, Fair	Stable

Summary Sł	heet for ADW Macroinvertebrate Monitor	ing						
Site Name:	Site Name: Frank and Poet: SAHS-West Sampled from Site ID: CD-1 Sampled by: W		2004 to 2006; 2023-2024		Water Quality Rating		Degree of Organic Pollution	
Lat/Long:	42.1884988,-83.2159729	Sampled by. W			0.0- 3.50	excellent	Polluti unlike	ion ely
N	/liCorps Water Quality Rating (WC	QR) 2023-2024 Trend using Linear Regressio		ession:	3.51- 4.50	very good	Sligh polluti possib	it ion ble
¹⁰ 8	Fall: Spring:	Not enough data Not enough data	4.51- 5.50	good	Som polluti possit	ion ble		
6			<i>Most Recent Samples:</i> 6.2, Fair 6.6, Fairly Poor	Spring 2024 Fall 2024	5.51- 6.50	fair	Fairl substar polluti likel	y ntia ion iy
2			Average of Recent Samples	oles	6.51- 7.50	fairly poor	Substar polluti likely	ntial ion Y
0 2020	0 2020 2021 2022 2023 2024 2025	6.6, Fairly Poor	g)	7.51- 8.50	poor	Very substar polluti likel	y ntia ion ly	
	 Fall Samples Fall Samples 				8.51- 10.0	very poor	Sever polluti likel	re ion ly
	MiCorps Water Quality Rating	g (WQR)	2004-2006					
	using resence/Absence (instol	ical trendy	Fall:	ession: No significant change				
10			Spring:	No significant change				
8								
6			Fall Average Score: Spring Average Score:	6.9, Fairly Poor 7.7. Poor				
4				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
2								
0								
2003.5	2004 2004.5 2005 2005.5	2006 2006.5						
	 Fall Samples Spring Samples 							

Summary Sł	Frank and Poet: SAHS-East	Sampled from: 2004	to the presen	+	Water Qua	ality Rating	Degree of Organic
Site ID: Lat/Long:	CD-2 42.187821, -83.214983	Sampled by: Wayne County		0.0- 3.50	excellent	Pollution Pollution unlikely	
	MiCorps Water Quality Rating (WQR	20 R) Tra	21-2024 end usina Line	ar Rearession:	3.51- 4.50	very good	Slight pollution possible
10	using Abundance (standard protoco	l) Fa Sp	Fall: Stable Spring: Stable Most Recent Samples: 6.4 Fair	4.51- 5.50	good	Some pollution possible	
8				5.51- 6.50	fair	Fairly substantial pollution likely	
4		7.0), Fairly Poor	Fall 2024	6.51- 7.50	fairly poor	Substantial pollution likely
2		(Pi 6.6	erage of Recei revious 3 Fall, . 5	nt Samples 3 Spring) Fairly Poor	7.51- 8.50	poor	Very substantial pollution likely
2020	2021202220232024• Fall Samples• Spring Samples	2025			8.51- 10.0	very poor	Severe pollution likely



Trend using Linear Regression:							
Fall: No significant change							
Spring:	No significant change						
Fall Average Score	e: 6.8, Fairly Poor						

Spring Average Score: 6.7, Fairly Poor

Summary Sł	neet for ADW Macroinvertebrate Monitoring					
Site Name:	Brownstown Creek: Woodhaven Community Park Sampled from:	: 2005 to the present	Water Quality Rating		Degree of Organic Pollution	
Site ID: Lat/Long:	CD-3 Sampled by: W 42.1269, -83.2426	/ayne County	0.0- 3.50	excellent	Pollution unlikely	
	MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)	2022-2024 Trend using Linear Regression:	3.51- 4.50	very good	Slight pollution possible	
10		Fall:Not enough dataSpring:Not enough data	4.51- 5.50	good	Some pollution possible	
6		Most Recent Samples: 7.5, Poor Spring 2024 8.0, Poor Fall 2024 Average of Recent Samples	5.51- 6.50	fair	Fairly substantial pollution likely	
2			6.51- 7.50	fairly poor	Substantial pollution likely	
0 2020	2021 2022 2023 2024 2025	(Previous 3 Fall, 3 Spring) 7.7 Poor	7.51- 8.50	poor	Very substantial pollution likely	
	Fall Samples Spring Samples		8.51- 10.0	very poor	Severe pollution likely	
10 8 6 4 2 0 2004	MiCorps Water Quality Rating (WQR) using Presence/Absence (historical trend)	2005-2015Trend using Linear Regression:Fall:No significant changeSpring:No significant changeFall Average Score:7.0, FairlySpring Average Score:6.9, Fairly	Poor Poor			
2004	Fall Samples Spring Samples					

Summary Sh	neet for ADW Macroinvertebrate Mon	itoring					
Site Name:	Blakely Drain: Merriman Rd Sampled fron		2007 to 2017; 2024	Wate	Water Quality Rating		Degree of Organic Pollution
Site ID: _at/Long:	CD-9 42.1784007, -83.3448151	Jayne County		excellent		Pollution unlikely	
	MiCorps Water Quality Ratir using Abundance (standard	ng (WQR) protocol)	Trend using Linear Reg Fall: No significa	ression: 3.5 ant change	L- very good		Slight pollution possible
10			Spring: No significa	ant change 4.5 5.5	1- 0 good		Some pollution possible
6		•	Most Recent Sample: 6.7, Fair Spring 2024	5.5	1- O ^{fair}		Fairly substantial pollution likely
4			Average of Recent Sam	6.5 ples 7.5	1- fairly poor		Substantial pollution likely
2	2011 2016	2021 2020	(Previous 3 Fall, 3 Sprin 6.7, Fair	9g) 7.5 8.5	1- 0		Very substantial pollution likely
2006	• Fall Samples • Spring Samp	2021 2026		8.5 10.	1- 0 very poor		Severe pollution likely



Trend using Linear Regression:Fall:No significant change

Spring: No significant change

Most Recent Sample:6.3Fall 2017

Fair

Average of Recent Samples (Previous 3 Fall, 3 Spring) 6.4

Fair

Summary Sl	heet for ADW Macroinvertebrate Monitoring					
Site Name:	Blakely Drain: Middlebelt Rd Sampled from: 2022 to the present		Water Qua	Quality Rating		Degree of Organic Pollution
Site ID: Lat/Long:	CD-9B Sampled by: W 42.179431, -83.325292	ayne County	0.0- 3.50	excellent		Pollution unlikely
	MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)	2022-2024 Trend using Linear Regression:	3.51- 4.50	very good		Slight pollution possible
10		Fall:Not enough dataSpring:Not enough data	4.51- 5.50	good		Some pollution possible
6	•	Most Recent Samples:5.8, FairSpring 2022	5.51- 6.50	fair		Fairly substantial pollution likely
2		6.1, Fair Fall 2024 <i>Average of Recent Samples</i>	6.51- 7.50	fairly poor		Substantial pollution likely
0 2020	2021 2022 2023 2024 2025	(Previous 3 Fall, 3 Spring) 6.4 Fair	7.51- 8.50	poor		Very substantial pollution likely
			8.51- 10.0	very poor		Severe pollution likely

ummary Sl	heet for ADW Macroinvertebrate Mo	nitoring Sampled: 200	0 2022 2024	Water Quality Rating		Degree of Organic	
ite ID: at/Long:	ID: CD-11 (or CD-9A) Sampled by: Wayne County Long: 42.176889, -83.364582		Vayne County	0.0- 3.50	excellent	Pollution Pollution unlikely	
	MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)		2022-2024 Trend using Linear Regression:	3.51- 4.50	very good	Slight pollution possible	
10			Fall:Not enough dataSpring:Not enough data	4.51- 5.50	good	Some pollution possible	
6	•	•	Most Recent Sample: 6.4, Fair Spring 2022	5.51- 6.50	fair	Fairly substantial pollution likely	
2			6.8, Fairly Poor Fall 2024 Average of Recent Samples	6.51- 7.50	fairly poor	Substantial pollution likely	
0 2020	0 2020 2021 2022 2023 2024 2025 (Previous 3 F		(Previous 3 Fall, 3 Spring) 6.6 Fairly Poor	7.51- 8.50	poor	Very substantial pollution likely	
	Fall Samples Spring Sa	Imples		8.51- 10.0	very poor	Severe pollution likely	
10 8 6 4 2	MiCorps Water Quality Ra using Presence/Abs		2007Trend using Linear Regression:Fall:Not enough dataSpring:Not enough dataMost Recent Sample:7.4, FairFall 2007p				





Summary S	heet for ADW Macroinvertebrate Monitoring						
Site Name:	Ecorse Creek North: RA YoungRecreation CenterSampled from: 2007 to the presentEC-7Sampled by: Wayne County (2007-2021)		Water Quality Rating			Degree of Organic Pollution	
Lat/Long:	42.271773,-83.255188 HRWC	y: wayne County (2007 2 (2022-present)	i22-present)		excellent		Pollution unlikely
	MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)	2021-2024 Trend using Line	ear Regression:	3.51- 4.50	very good		Slight pollution possible
10		Fall:	Stable	4.51- 5.50	good		Some pollution possible
6	•	Spring:	Getting worse (3 points only)	5.51- 6.50	fair		Fairly substantial pollution likely
2		Most Recent Sa 7.0, Fairly Poor 7.7, Poor	mple: Fall 2023 Spring 2024	6.51- 7.50	fairly poor		Substantial pollution likely
0 2020	2021 2022 2023 2024 20	Average of Rece	ent Samples	7.51- 8.50	poor		Very substantial pollution likely
	 Fall Samples Spring Samples 	(Previous 3 Fall, 7.3, Fairly Poor	3 Spring)	8.51- 10.0	very poor		Severe pollution



Trend using Linear Regression:

Fall:No significant changeSpring:No significant change

Fall Average Score: 6.5, Fair/ Fairly Poor Spring Average Score 7.2, Fairly Poor



0 <u>2002</u>

Fall Samples
Spring Samples

Fall Average Score:7.0, Fairly PoorSpring Average Score:7.0, Fairly Poor

Summary S	heet for ADW Macroinvertebrate Monitoring				
	Woods Creek: Lower Huron		Water Qu	ality Rating	Degree of Organic Pollution
Site Name: Site ID: Lat/Long:	e Name:Metropark/Woods Creek Picnic AreaSampled from: 1996 to the presente ID:HR-2Sampled by: Wayne County (P/A, 2007-2021)/Long:42.186967,-83.427956HRWC (1996-present)		0.0- 3.50	excellent	Pollution unlikely
	MiCorps Water Quality Rating (WQR)	1996-2024 Trend using Linear Regression:	3.51- 4.50	very good	Slight pollution possible
10	using Abundance (standard protocol)	Fall:No sig changeSpring:No sig change	4.51- 5.50	good	Some pollution possible
8		Most Recent Sample: 5.8, Fair Spring 2024	5.51- 6.50	fair	Fairly substantial pollution likely
2		4.8, Good Fall 2024 Average of Recent Samples (Previous 3 Fall, 3 Spring) 5.2, Good	6.51- 7.50	fairly poor	Substantial pollution likely
1995	2000 2005 2010 2015 2020 2025 • Fall Samples • Spring Samples		7.51- 8.50	poor	Very substantial pollution likely
		2007 2021	8.51- 10.0	very poor	Severe pollution likely
10 8 6 4 2 0 2006	2008 2010 2012 2014 2016 2018 2020 2022	Z007-2021Trend using Linear Regression:Fall:No significant chanSpring:No significant chanFall Average Scor 5.5, Good/FairSpring Average S 5.6, Fair	nge		
	Fall Samples Spring Samples				

Summary Sł	neet for ADW Macroinvertebrate Monitoring						
Site Name:	Brooks Drain: Brooks Drain Sample		d from: 2007 to 2010; 2020; 2024		Water Quality Rating		Degree of Organic Pollution
Site ID: Lat/Long:	HR-3 Sampled by: Wayne County 42.1756445, -83.4281497		0.0- 3.50	excellent	Pollutior unlikely		
	MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)		2024 <i>Trend using Linear Regression:</i> Fall: Not enough data	3.51- 4.50	very good	Slight pollution possible	
10			Spring:	Not enough data	4.51- 5.50	good	Some pollutior possible
6			5.9, Fair 7.0, Fairly Poor	Spring 2024 Fall 2024	5.51- 6.50	fair	Fairly substanti pollutior likely
2			Average of Recei (Previous 3 Fall,	nt Samples 3 Spring)	6.51- 7.50	fairly poor	Substanti pollutior likely
0 2020 2021 2022 2023 2024 2025			6.5, Fair/Fairly P	200r	7.51- 8.50	poor	Very substanti pollutior likely
					8.51- 10.0	very poor	Severe pollution likely

Summary S	heet for ADW Macroinvertebrate Monitoring							
Site Name:	Regan Drain: Willows Metropark Interloop Road Sampled from: 2007 to the pre		2007 to the present	Water Qua	Water Quality Rating		Degree of Organic Pollution	
Site ID: Lat/Long:	HR-5 42.126960,-83.377895	Sampled by: Wayne County (2007-2021) HRWC (2022-present)			excellent		Pollution unlikely	
	MiCorps Water Quality Rating (Number of the second	NQR)	2021-2024 Trend using Linear Regression:	3.51- 4.50	very good		Slight pollution possible	
10			Fall:No sig. changeSpring:Not enough dat	4.51- 5.50	good		Some pollution possible	
6	•		Most Recent Sample: 5.8, Fair Spring 2024	5.51- 6.50	fair		Fairly substantial pollution likely	
2			7.0, Fairly Poor Fall 2024 <i>Average of Recent Samples</i>	6.51- 7.50	fairly poor		Substantial pollution likely	
0 2020	2021 2022 2023 2024	2024 2025	(Previous 3 Fall, 3 Spring) 5.5, Good/Fair	7.51- 8.50	poor		Very substantial pollution likely	
	Fall Samples Spring Samples			8.51- 10.0	8.51- 10.0 very poor		Severe pollution likely	
			2007-2015					



Trend using Linear Regression: Fall: No significant change

No significant change Spring:

Fall Average Scor 6.5, Fair/ Fairly Poor Spring Average Sc 7.2, Fairly Poor



Fair

• Fall Samples • Spring Samples

Site Name: Port Creek: Armstrong Road Sampled from: 2000 to the present				Water Qua	Water Quality Rating		Degree of Organic Pollution	
Site ID: Lat/Long:	HR-9 5 42.074023, -83.284705	Sampled by: HRWC		0.0- 3.50	excellent		Pollution unlikely	
MiCorps Water Quality Rating (WQR)		2000-2024 Trend using Linear Regression:	3.51- 4.50	very good		Slight pollution possible		
10			Fall:No sig. trendSpring:No sig. trend	4.51- 5.50	good		Some pollution possible	
6			Most Recent Sample: 6.1, Fair Spring 2023	5.51- 6.50	fair		Fairly substantial pollution likely	
2			6.1, Fair Fall 2024 <i>Average of Recent Samples</i>	6.51- 7.50	fairly poor		Substantial pollution likely	
0 2000 2005 2010 2015 2020 2025			(Previous 3 Fall, 3 Spring) 5.8, Fair	7.51- 8.50	poor		Very substantial pollution likely	
	 Fair Samples Spring Samples 			8.51- 10.0	very poor		Severe pollution likely	

Summary Sheet for ADW N	Aacroinvertebrate Monitoring	5						
Site Name: Huron River a	Huron River at Flat Rock Boat Launch HR-10 42.096883, -83.295437		Sampled from: 1996 to the present Sampled by: HRWC		Water Quality Rating		Degree of Organic Pollution	
Site ID: HR-10 Lat/Long: 42.096883, -8					0.0- 3.50	excellent	Pollution unlikely	
MiCorps Water Quality Rating (WQR) using Abundance (standard protocol)		1996-2024 Trend using Lined	1996-2024 Trend using Linear Regression:	3.51- 4.50	very good	Slight pollution possible		
10 8	Fall: No sig. char Spring: No sig. char	No sig. change No sig. change	4.51- 5.50	good	Some pollution possible			
6			Most Recent San 6.2, Fair	Spring 2022	5.51- 6.50	fair	Fairly substantial pollution likely	
2	•		Average of Recer	nt Samples	6.51- 7.50	fairly poor	Substantial pollution likely	
0 (Previous 3 Fall, 3 Spring Samples) 1996 2001 2006 2011 2021 5.7, Fair		3 Spring)	7.51- 8.50	poor	Very substantial pollution likely			
					8.51- 10.0	very poor	Severe pollution likely	