



**www.therouge.org**  
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 Plymouth, MI 48170  
 734-927-4904

# Rouge River Benthic Monitoring Program Spring 2022 Report

This report covers benthic macroinvertebrate monitoring at 29 sites on Rouge River tributaries and branches in the spring of 2022. Most sites were sampled during the Spring Bug Hunt on April 23, 2022 where 73 attendees sampled 19 sites in 14 teams. The plan had been to sample 27 sites on April 23 but the night before the event, as much as 1.1 inches of rain fell. Many sites were simply too deep and fast to sample. Five sites were moved upstream. FOTR

staff, Wayne County staff and volunteers sampled seven additional sites before and after the event, one site was sampled as part of the spring team leader training and two additional sites were sampled by Sue Thompson on her own.

**FRIENDS OF THE ROUGE BENTHIC MONITORING PROGRAM**  
 FOTR's benthic monitoring program was started in 2001 to involve a large number of volunteers in monitoring the health of the watershed by sampling the creeks of the Rouge River. The types and number of benthic macroinvertebrates found can be used to assess water quality. Each team of volunteers samples two sites under the direction of a trained team leader. Samples of each organism are collected and field identifications are verified in the lab.

### Stream Quality Index, Taxa, EPT

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher score. A number of different organisms also results in a high score. The SQI is then given a rating:

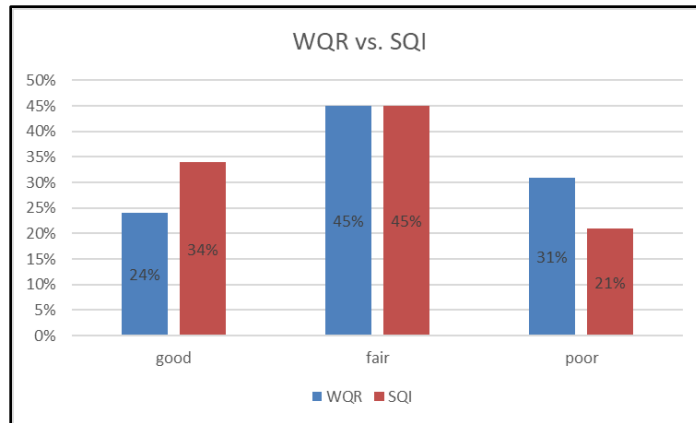
- >48 = EXCELLENT
- 34-48 = GOOD
- 19-33 = FAIR
- <19 = POOR

Number of **taxa** represents the number of different families of organisms. A higher number of taxa indicate a healthier site.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.

## Overall Scores

Stream Quality Index (SQI) and the new Water Quality Index (WQR) both averaged fair or 45% of the sites (map p. 5, Table 3 p. 6, and graph below). SQI rated more sites in the good range and fewer sites in the poor range than WQR.



### Water Quality Rating

Starting in Fall 2021, Michigan Clean Water Corps, the statewide organization that provides the protocol for monitoring groups in the state, replaced **SQI** (see box above) with **Water Quality Rating (WQR)**. The new WQR rates each Family based on the Hilsenhoff Sensitivity Index. The number of individuals found for each family is then multiplied by the family's sensitivity rating, then divided by the total number of individual organisms found. Leaders strive to collect at least 100 organisms. If they collect under 60, the score is automatically 7, if under 30, it is automatically 10. Unlike SQI, the lower the WQR, the higher quality the rating.

- 00.0-3.50 = EXCELLENT
- 3.51-4.50 = VERY GOOD
- 4.51-5.50 = GOOD
- 5.51-6.50 = FAIR
- 6-51-7.50 = FAIRLY POOR
- 7.51-8.50 = POOR
- 9.51-10.0 = VERY POOR

## Data Trends

We compared the spring 2022 scores to the average for each site (see each section). Of the 29 sites, four (14%) scored above a standard deviation of the mean, four (14%) were below and 21 (72%) were stable.

To compare trends over time, we analyzed the trends in SQIs (Table 1, p. 3; graphs p. 7-11). The Middle 1 and the Middle 3 subwatersheds are showing significant positive trends, even when combined. No other subwatershed showed significant trends.

Branch	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	0.1027	0.3421	no trend	27	Fair
Main3-4*	-0.1351	0.7504	no trend	25	Fair
Upper	-0.0650	0.5683	no trend	24	Fair
Johnson Creek	0.1870	0.2072	no trend	39	Good
Middle 1	0.5320	0.0009	yes, positive	30	Fair
Middle 3*	0.5756	0.0110	yes, positive	20	Fair
Lower 1	0.1125	0.2344	no trend	30	Fair
Lower 2*	-0.1050	0.6097	no trend	26	Fair
Middle 1 and Middle 3 combined	0.689	0.000005	yes, positive	27	Fair
*no sites sampled in spring 2022 in these subareas					

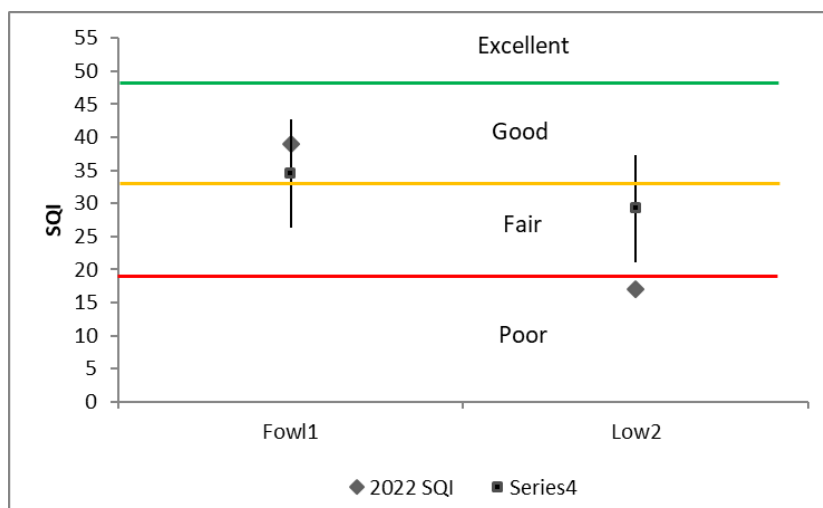
In addition to the trend analysis by subwatershed, a site-by-site analysis of all the sites was done (Table 2). Three sites had significant **negative** trends. Two sites had positive trends.

Site	p-value	Slope	True trend	Site average score	Water Quality Rating
Nott	0.0346	-0.4555	yes, negative	24	Fair
MR22	0.0249	-0.8073	yes, negative	40	Good
MR27	0.0012	-3.9403	yes, negative	42	Good
Nton	0.0265	0.5290	yes, positive	19	Fair
Wall2	0.0162	0.4541	yes, positive	22	Fair

### Lower Branch

Two sites were sampled on the Lower Branch of the Rouge: Fowl1 and Low2. The Fowl1 site had a fair WQR and a good SQI with 17 taxa including 4 EPT. The Low2 site had a poor score for both SQI and WQR and was below a standard deviation of the mean for the site.

**Chart 1: Lower Branch SQI and Mean with Standard Deviation**



**Standard Deviation**

Some sites have consistent scores where others vary greatly year to year. Standard deviation is a measure of how spread out your data is. 68% of your data will fall within one standard deviation of the mean (red areas shown above). On Charts 1-4, one standard deviation is represented by the vertical lines for each site. Standard deviation helps us to determine whether the current score is within normal for the site.

## Main Branch

Eight sites on the Main Branch were sampled, including Evans, Pebble, Nottingham and Sprague Creeks. For SQI, three sites were good, four fair and one poor. For WQR, 2 sites were good, 4 fair and 2 fairly poor. The site that scored poor or fairly poor for both scoring systems, Evan2, had less than 60 organisms found. Seven sites were within a standard deviation of the mean and one was above – Main5.

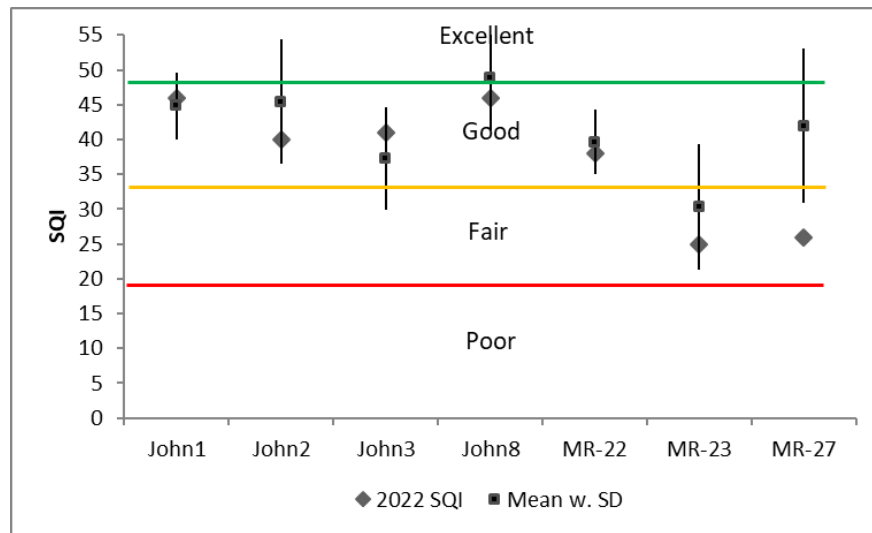
**Chart 2: Main Branch & Tributary SQI and Mean with Standard Deviation**



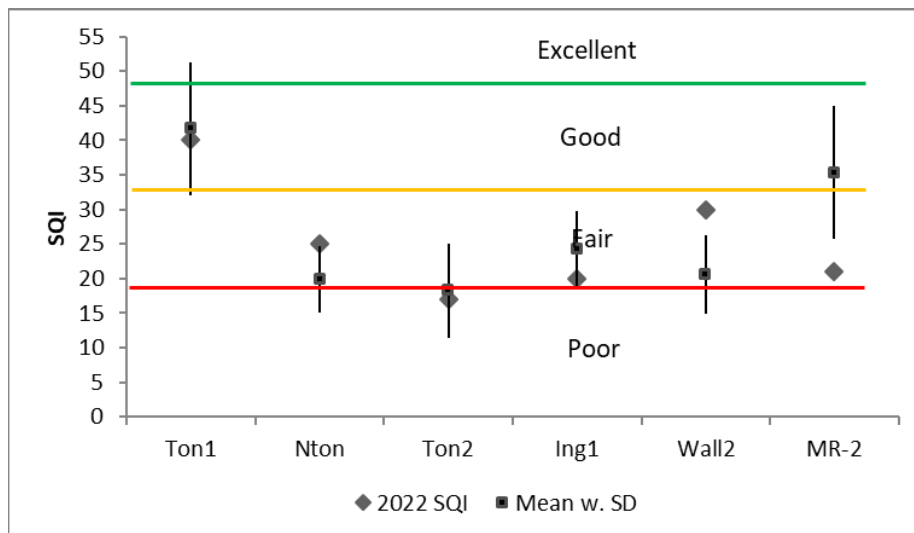
## Middle Branch

Thirteen sites were sampled on the Middle branch including three tributaries: Johnson, Tonquish and Walled Lake Branch Creeks. For SQI, six sites were good, six were fair and one was poor. For WQR, four sites were good (one very good), six fair and three fairly poor – all because they had less than 60 organisms. For the Johnson Creek (Chart3), most sites were within a standard deviation of the mean and one was below – MR-27. For the other tributaries and main Middle (Chart 4), four sites were within a standard deviation of the man, one was above (Wall2) and one was below (MR-2). High water was likely the cause for the two low scores.

**Chart 3: Johnson Creek SQI and Mean with Standard Deviation**



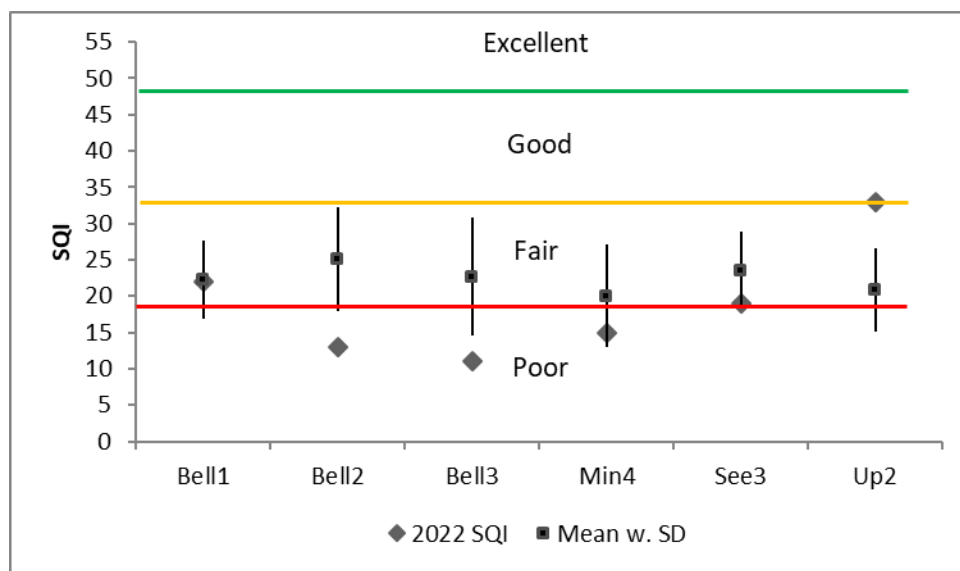
**Chart 4: Tonquish, Walled Lake and Middle Branch SQI and Mean with Standard Deviation**



### Upper Branch

Six Upper branch sites were sampled this spring, including the Bell Branch, Minnow Pond and Seeley Creeks. For SQI, three were fair and three poor. For WQR, one was good, two were fair and three poor (2 very poor, 1 fairly poor). Three sites were within a standard deviation of the mean, two were below (Bell2 and Bell3) and one was above (Up2).

**Chart 5: Upper Branch SQI with Mean and Standard Deviation**



# 2022 Spring Bug Hunt

**Water Quality Rating**

- ◇ very good
- ◇ good
- ◇ fair
- ◇ fairly poor
- ◇ very poor

**Stream Quality Index**

- good
- fair
- ✚ poor

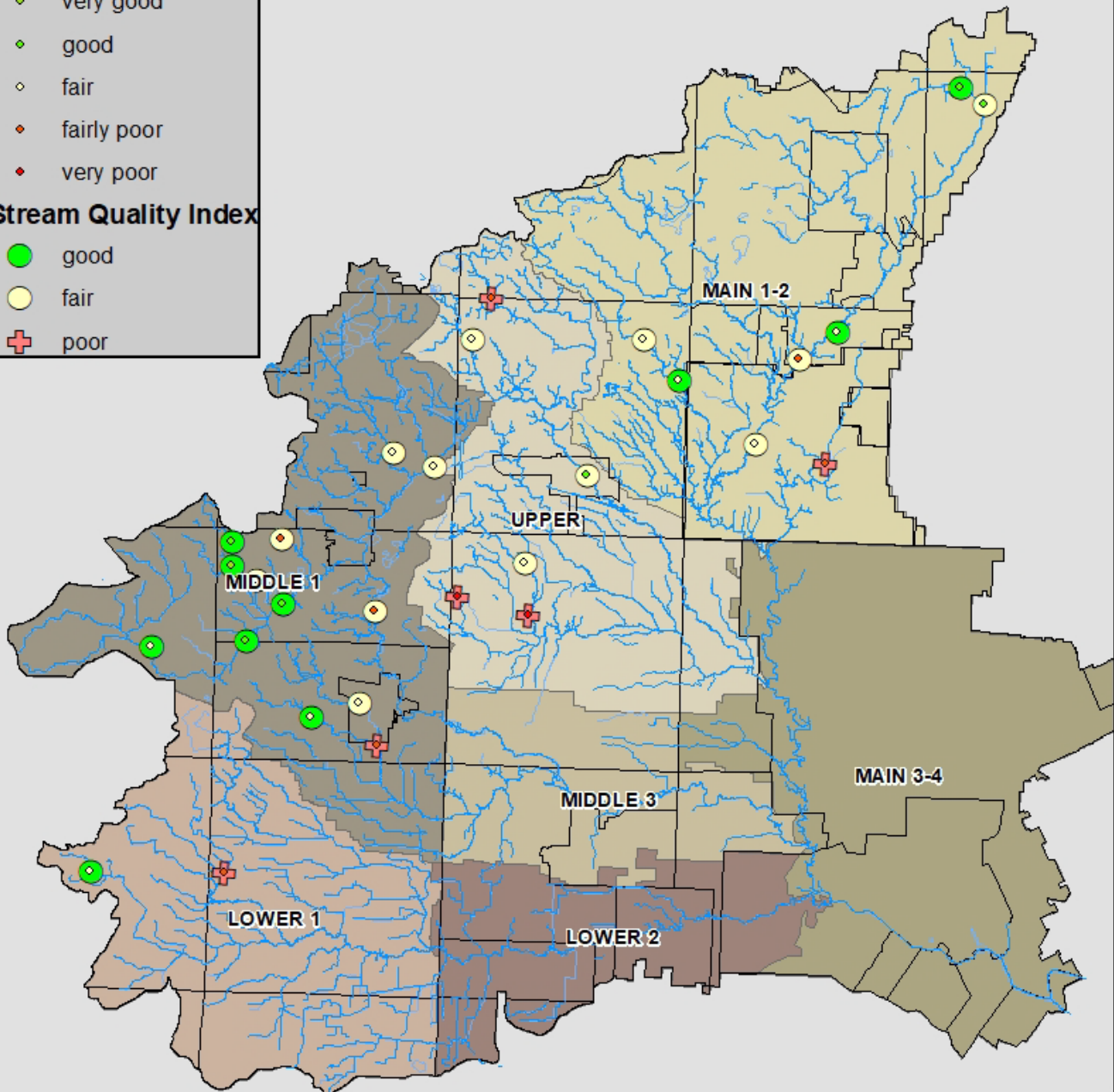


Table 3: Sampling Sites and Scores

Branch	Stream Name	FIELDID	Site Description	city/village/township	WQR	WQRR	SQI	comparison to average SQI	SQIR	TAXA	EPT
Lower	Fowler Creek	Fowl1	Prospect	Superior Twp	5.48	fair	39	up	good	17	4
Lower	Lower Rouge	Low2	Cherry Hill	Canton Twp	7.00	fairly poor	17	down	poor	8	1
Main	Evans Creek	Evan2	LTU	Southfield	7.00	fairly poor	16	same	poor	6	1
Main	Nottingham Creek	Nott	Country Day	Beverly Hills	7.08	fairly poor	20	down	fair	11	0
Main	Pebble Creek	Peb2	Pebble 13 Mile	Farmington Hills	5.85	fair	29	up	fair	13	1
Main	Pebble Creek	Peb3	Pebble d/s Dam	Farmington Hills	5.68	fair	36	up	good	14	2
Main	Sprague Creek	Sprag	Main Lloyd Stage	Troy	4.63	good	42	up	good	15	3
Main	Main Rouge	Main1	FF Pk	Troy	5.34	good	32	up	fair	11	2
Main	Main Rouge	Main5	Douglas Evans	Beverly Hills	6.16	fair	40	up	good	16	1
Main	Main Rouge	Main6	Sfld Civic Ctr	Southfield	6.43	fair	26	up	fair	14	1
Middle	Johnson Creek	John1	5M Salem	Salem Twp	5.69	fair	46	up	good	17	3
Middle	Johnson Creek	John2	5M NV	Northville Twp	4.93	good	40	down	good	15	6
Middle	Johnson Creek	John3	6M NV	Northville Twp	5.30	good	41	up	good	16	6
Middle	Johnson Creek	John8	Maybury Angell	Northville Twp	4.16	very good	46	down	good	18	5
Middle	Johnson Creek	MR-22	Maybury south	Northville Twp	5.19	good	38	down	good	18	3
Middle	Johnson Creek	MR-23	Maybury north	Northville Twp	7.00	fairly poor	25	down	fair	11	1
Middle	Johnson Creek	MR-27	Ridge	Northville Twp	6.05	fair	26	down	fair	10	2
Middle	Tonquish Creek	Nton	S Evergreen St	Plymouth	6.00	fair	25	up	fair	9	2
Middle	Tonquish Creek	Ton1	Plym Twp Pk	Plymouth Twp	6.24	fair	40	down	good	16	2
Middle	Tonquish Creek	Ton2	Ann Arbor Rd	Plymouth Twp	7.00	fairly poor	17	down	poor	7	1
Middle	Ingersoll Creek	Ing1	Brookfarm Park	Novi	6.35	fair	20	down	fair	8	1
Middle	Walled Lk Drainage	Wall2	WL 10 M	Novi	6.09	fair	30	up	fair	10	1
Middle	Middle Rouge	MR-2	Reservoir Rd	Northville Twp	7.00	fairly poor	21	down	fair	8	2
Upper	Bell Branch	Bell1	Bicentennial Park	Livonia	6.21	fair	22	same	fair	10	1
Upper	Bell Branch	Bell2	Schoolcraft College	Livonia	10.00	very poor	13	down	poor	6	0
Upper	Bell Branch	Bell3	Livonia 6 Mile	Livonia	10.00	very poor	11	down	poor	6	0
Upper	Minnow Pond	Min4	14 Mile	Farmington Hills	7.00	fairly poor	15	down	poor	7	1
Upper	Seeley Creek	See3	Kennedy Ct	Farmington Hills	5.77	fair	19	down	fair	14	1
Upper	Upper Rouge	Up2	Shiawasee Park	Farmington	5.23	good	33	up	fair	12	2
				<b>AVERAGE</b>	<b>6.27</b>		<b>28.45</b>			<b>11.83</b>	<b>1.93</b>

Thank you to all the **volunteers, Wayne County** and **Sue Thompson** for sampling additional sites, identifying difficult specimens and doing the trend analysis, and **Deirdre Devlin** and **Schoolcraft College** students for sampling one site.

This program is supported by the Erb Family Foundation, EGLE, Washtenaw County, the City of Southfield, the City of Troy, the Village of Beverly Hills, Northville Township, the City of Plymouth, Plymouth Township, the City of Novi, the City of Livonia and the City of Farmington.

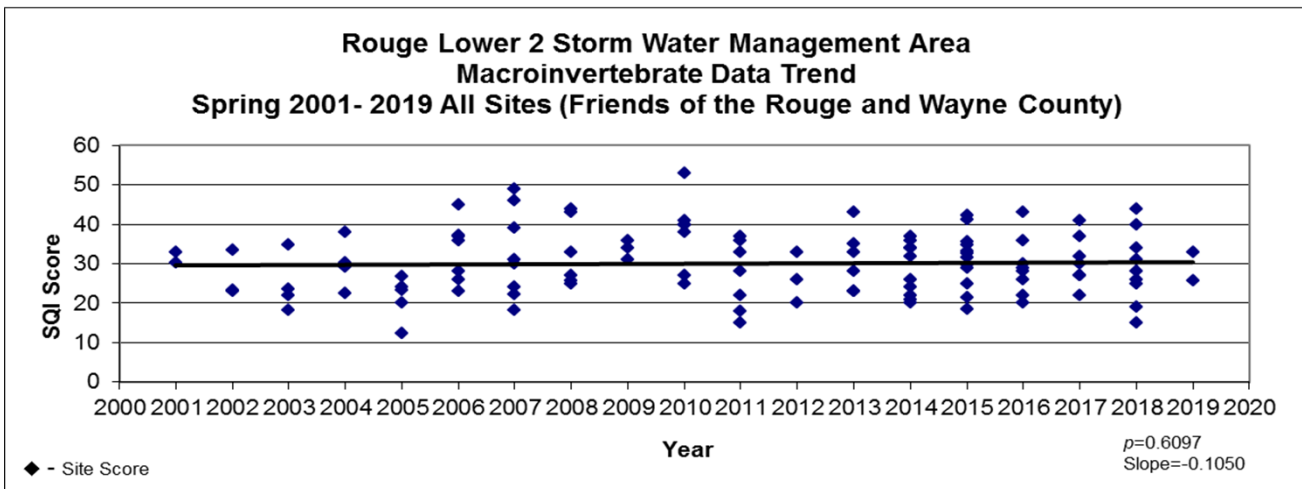
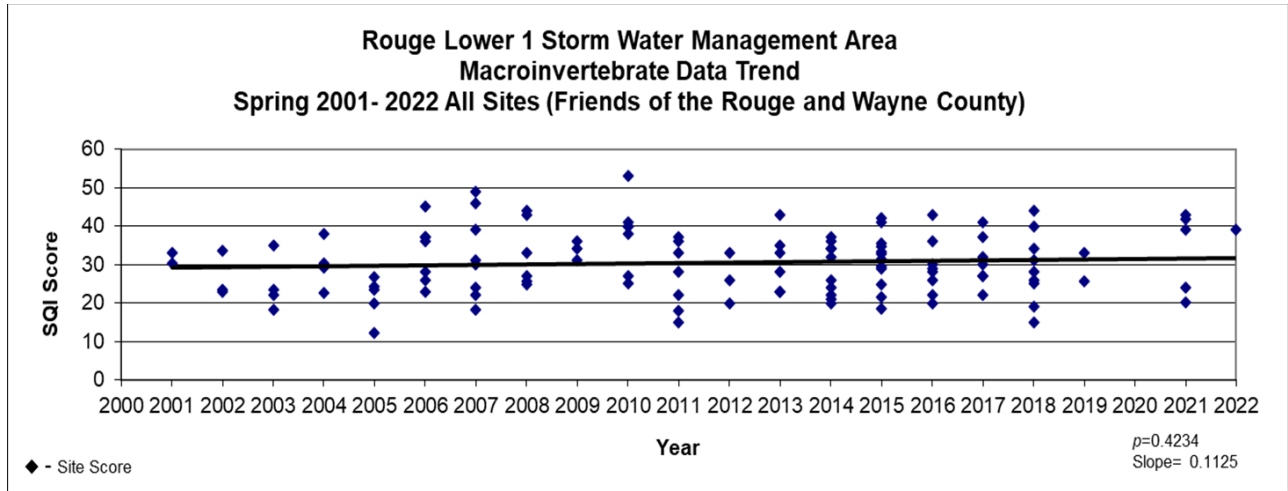
## Fall Bug Hunt Oct. 15, 2022 10 am-4pm

**Sign up online today (deadline Oct. 1, 2022 at [www.therouge.org](http://www.therouge.org))**

**Team Leader Training – Sat. Oct. 8, 2022 9am-3pm (must have participated in a previous event)**

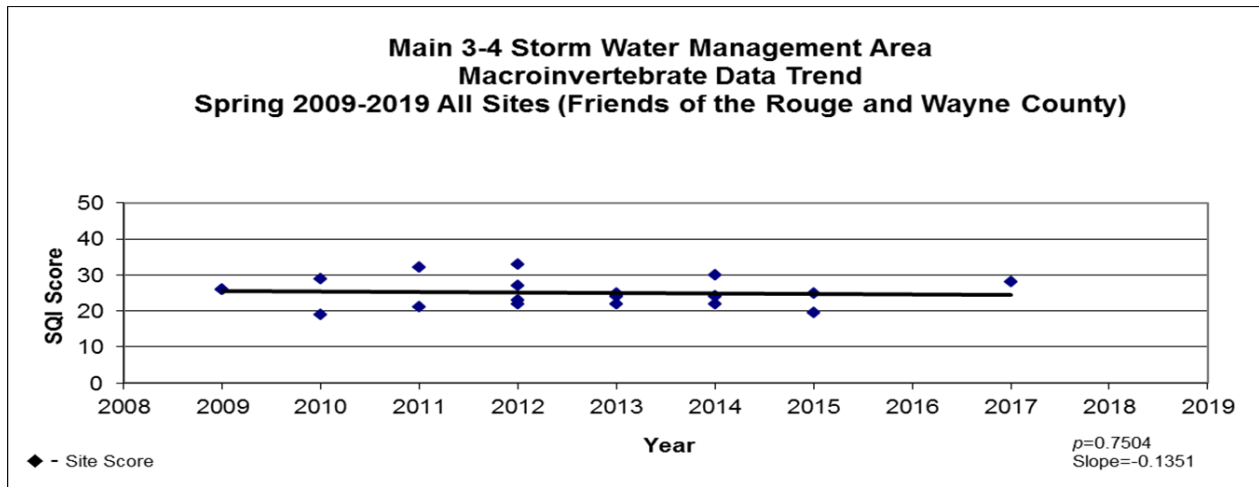
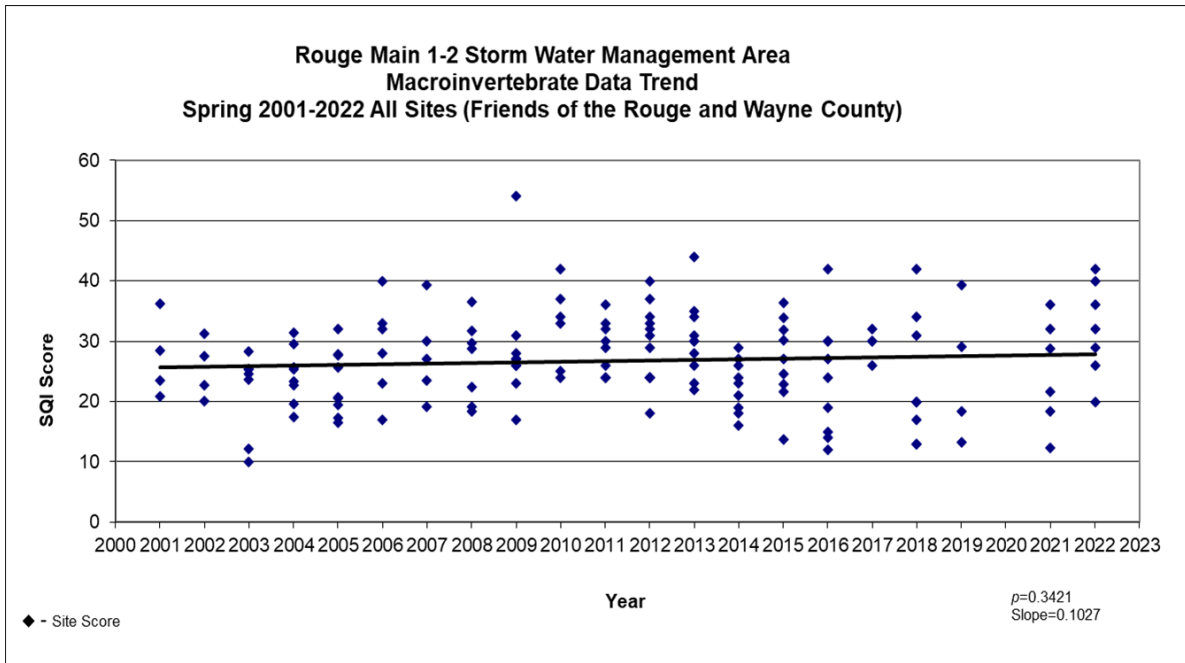
## **Trend Graphs**

## Lower Branch

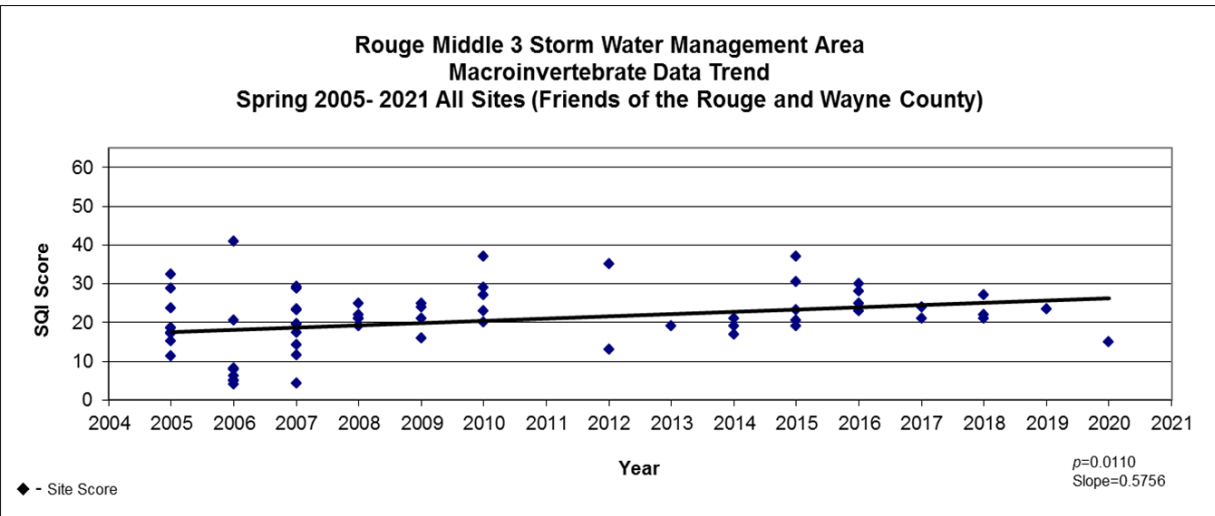
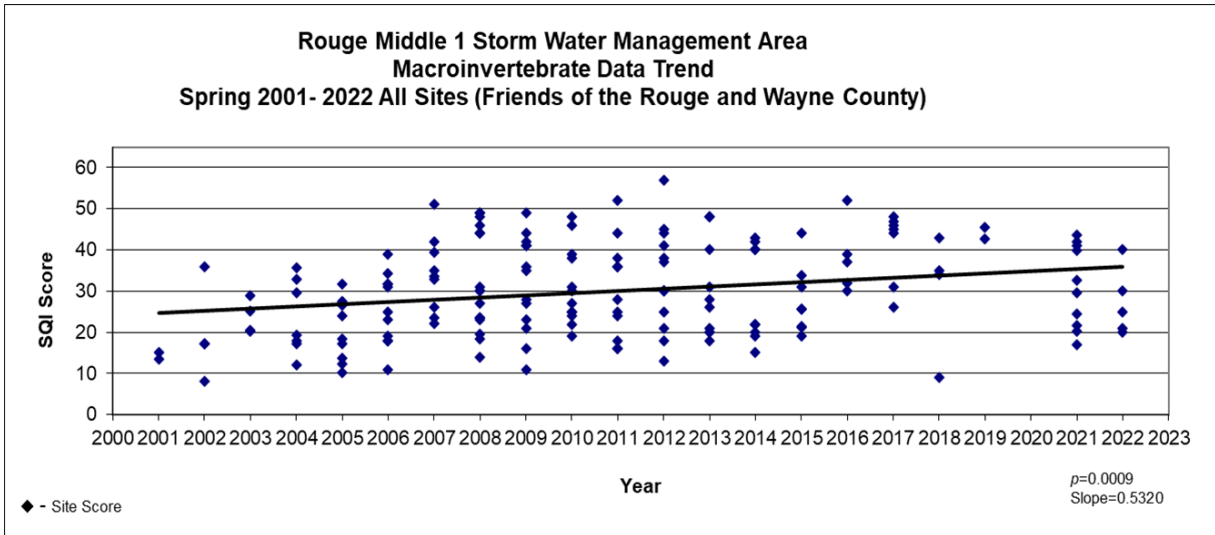
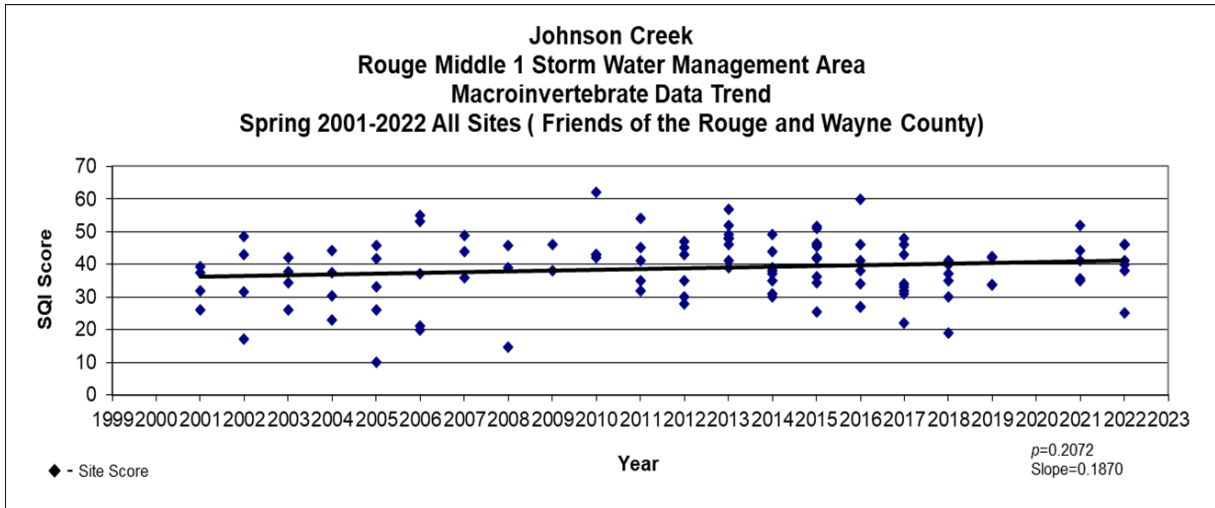




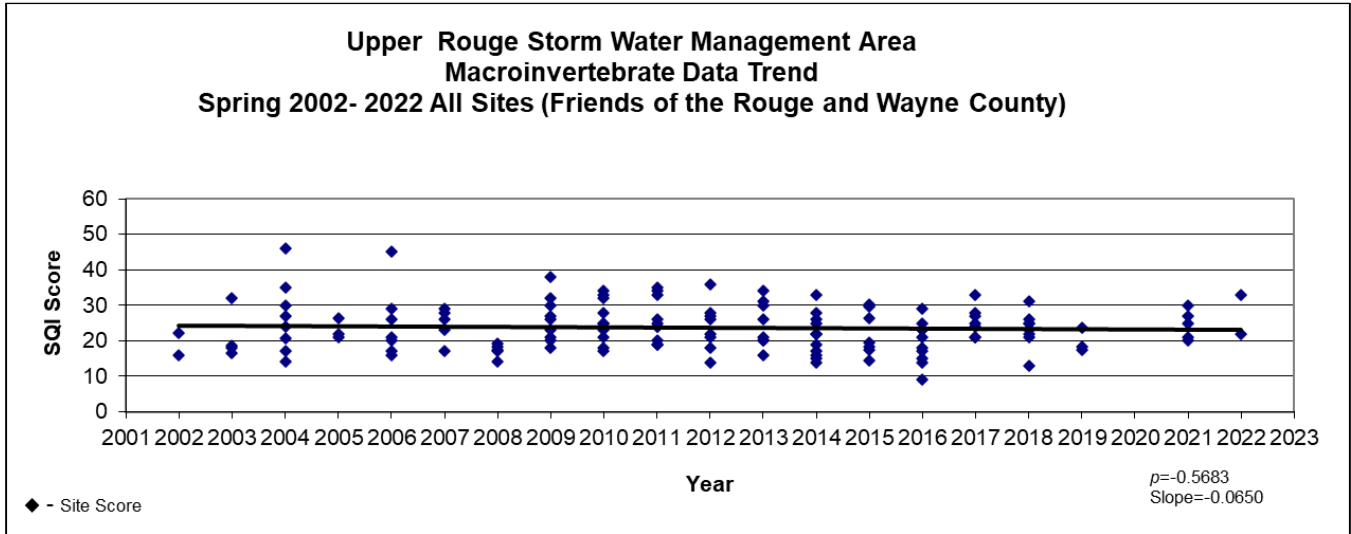
# Main Branch



## Middle Branch



## Upper Branch





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# Rouge River Benthic Monitoring Program Spring 2023 Report

This report covers benthic macroinvertebrate monitoring at 41 sites on Rouge River tributaries and branches in the spring of 2023. Most sites were sampled during the Spring Bug Hunt on April 15, 2023 where 84 attendees sampled 27 sites in 14 teams. Wayne County staff sampled six additional sites, FOTR sampled additional sites and Sue Thompson sampled six additional sites. Team Leader training was cancelled due to extremely high water and could not be rescheduled. A Bug Identification Night was held for Team Leaders on May 2 and 13 people attended. FOTR staff identified the rest of the specimens with assistance from Sue Thompson and dragonfly identification with assistance from Darrin O'Brien and Julie Craves.

## FRIENDS OF THE ROUGE BENTHIC MONITORING PROGRAM

FOTR's benthic monitoring program was started in 2001 to involve a large number of volunteers in monitoring the health of the watershed by sampling the creeks of the Rouge River. The types and number of benthic macroinvertebrates found can be used to assess water quality. Each team of volunteers samples two sites under the direction of a trained team leader. Samples of each organism are collected and field identifications are verified in the lab.

### Water Quality Rating

Starting in Fall 2021, Michigan Clean Water Corps, the statewide organization that provides the protocol for monitoring groups in the state, replaced SQI (see box above) with **Water Quality Rating (WQR)**. The new WQR rates each Family based on the Hilsenhoff Sensitivity Index. The number of individuals found for each family is then multiplied by the family's sensitivity rating, then divided by the total number of individual organisms found. Leaders strive to collect at least 100 organisms. If they collect under 60, the score is automatically 7, if under 30, it is automatically 10. Unlike SQI, the lower the WQR, the higher quality the rating.

- 00.0-3.50 = EXCELLENT
- 3.51-4.50 = VERY GOOD
- 4.51-5.50 = GOOD
- 5.51-6.50 = FAIR
- 6.51-7.50 = FAIRLY POOR
- 7.51-8.50 = POOR
- 9.51-10.0 = VERY POOR

### Summary

Stream Quality Index (SQI) averaged 30 or FAIR and the Water Quality Index (WQR) averaged 5.93 FAIR (map p. 7, Table 3 p. 9, and graph below). Taxa averaged 13 Families per site, EPT 2, and Chloride 201 (Table 3). Compared to average, ten sites were above a standard deviation of the mean SQI and seven were below.

To compare trends over time, we analyzed the trends in SQIs. When all of the sites were compared, there was a small but significant upward trend in SQIs (see graph below).

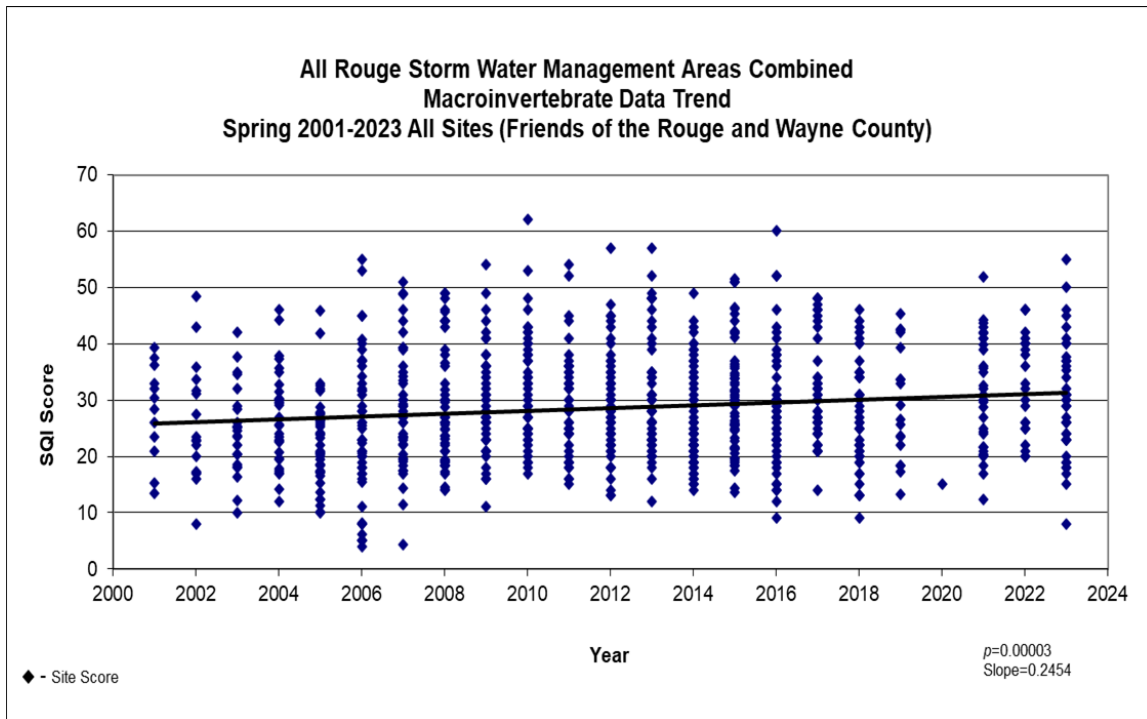
### Stream Quality Index, Taxa, EPT

Each site is given a **Stream Quality Index (SQI)** which is determined by weighting each type and number of organisms found by their sensitivity ratings. A higher proportion of sensitive organisms such as mayflies and caddisflies results in a higher score. A number of different organisms also results in a high score. The SQI is then given a rating:

- >48 = EXCELLENT
- 34-48 = GOOD
- 19-33 = FAIR
- <19 = POOR

Number of **taxa** represents the number of different families of organisms. A higher number of taxa indicate a healthier site.

**EPT** refers to the number of mayfly, caddisfly and stonefly families found; these three orders contain some of the most sensitive organisms.



Treated separately or together, the Middle 1 and the Middle 3 subwatersheds also had significant positive trends (Table 1, graphs p. 12-15). No other subwatershed showed significant trends.

Branch	slope	p-value	True trend	Subwatershed average score	Water Quality Rating
Main 1-2	0.1756	0.0779	no trend	27	Fair
Main3-4*	-0.1351	0.7504	no trend	25	Fair
Upper	-0.0542	0.6070	no trend	24	Fair
Johnson Creek	0.1475	0.2771	no trend	39	Good
Middle 1	0.3572	0.0163	yes, positive	30	Fair
Middle 3	0.4600	0.0218	yes, positive	20	Fair
Lower 1	0.1277	0.2921	no trend	31	Fair
Lower 2	-0.1708	0.3521	no trend	26	Fair
Middle 1 and Middle 3 combined	0.4421	0.0007	yes, positive	27	Fair
*no sites sampled in spring 2023 in this subarea					

In addition to the trend analysis by subwatershed, a site-by-site analysis of all the sites was done (Table 2). The majority of sites had no trend. Five sites had significant trends and all were positive.

Site	slope	p-value	Statistically significant trend	Site average score	Water Quality Rating
Main5	0.7662	0.0129	yes, positive	28	Fair
Bish2	0.7239	0.0397	yes, positive	23	Fair
Nton	0.6263	0.0052	yes, positive	21	Fair
Ton2	0.7134	0.0241	yes, positive	22	Fair
Fel2	0.5799	0.0202	yes, positive	29	Fair

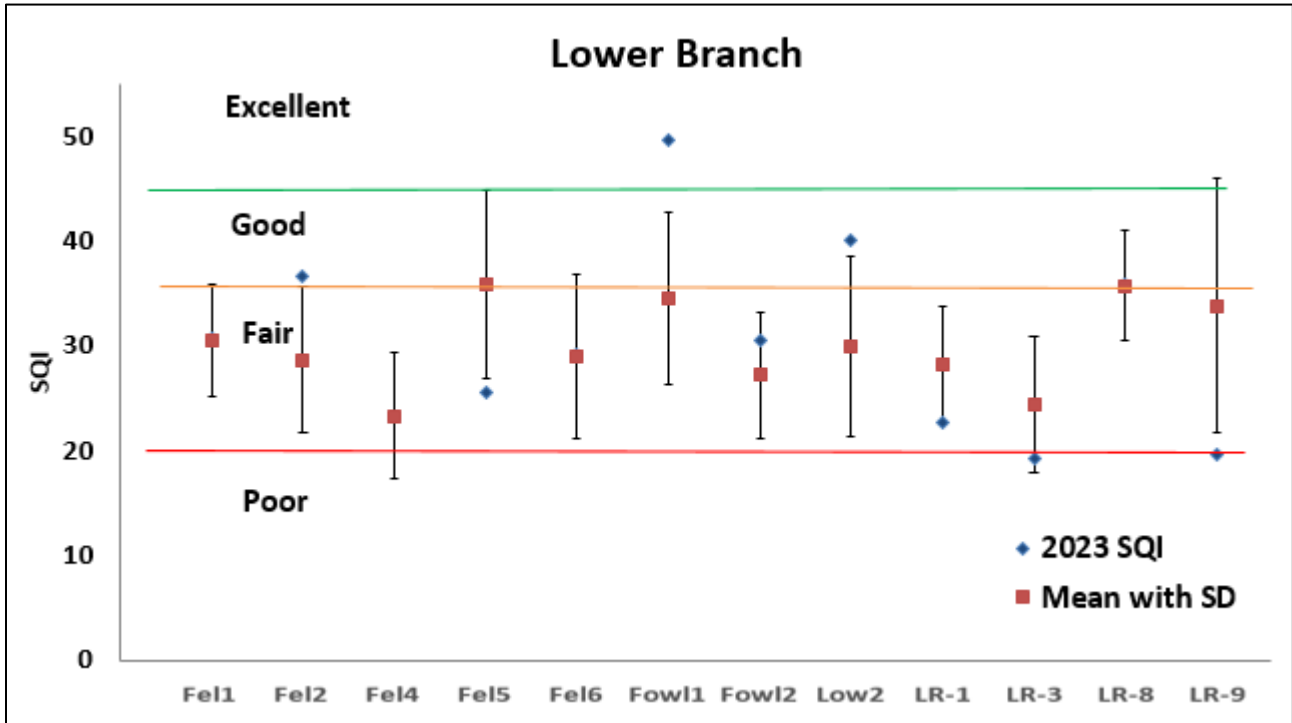
**Chloride (Road Salt)**

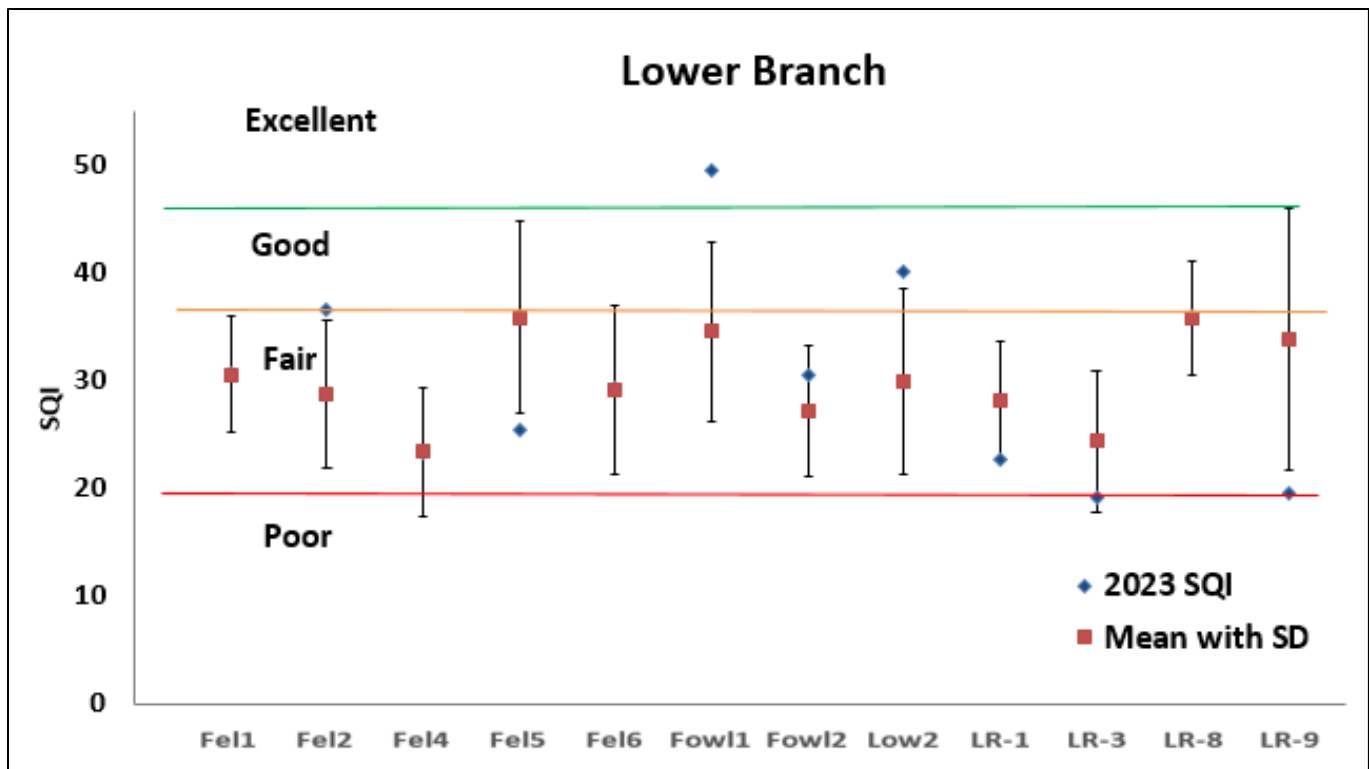
Teams tested each site for chloride using Hach test strips provided by the Izaak Walton League’s Salt Watch Program (Table 3, Map p. 10). High levels of salt in streams is detrimental to aquatic life. The state of Michigan’s chloride water quality values for surface waters (to protect aquatic life) are 320 mg/L (ppm) to protect against acute (short term) impacts, and 150 mg/L (ppm) to protect for chronic (long term) impacts. While the headwaters of the Lower and Middle branches had low levels of chloride, the Middle branch’s Tonquish Creek and Bishop Creek had levels considered toxic (acute), above 320 ppm. In the Upper and Main, all but two upstream sites had elevated levels and Pebble Creek, Bell Creek and Evans Creek all had levels above 320 or acute.

## Lower Branch

Twelve sites were sampled on the Lower since Canton Township began sponsoring sites (Table 3, p. 9, map p. 9-10). One site had an EXCELLENT SQI, three were GOOD and eight were FAIR, averaging out to 30 or FAIR. Four sites had GOOD WQRs, six were FAIR and two FAIRLY POOR, averaging 5.87 or FAIR. The number of taxa averaged 13 and EPT 2. In comparison to average, three sites: Fel2, Fowl1 and Low2 were all above a standard deviation for the SQI and two sites (Fel5 and LR-9) were below. One site had a positive trend when treated individually (Table 2). Overall the Lower1 and Lower2 subwatersheds had no significant trends (Table 1)

Road salt or chloride had the lowest average in the Lower branch as compared to the other three branches. It averaged 86 ppm, below any threshold for impairment. Two sites were above – LR-1 and LR-3, the furthest downstream sites.

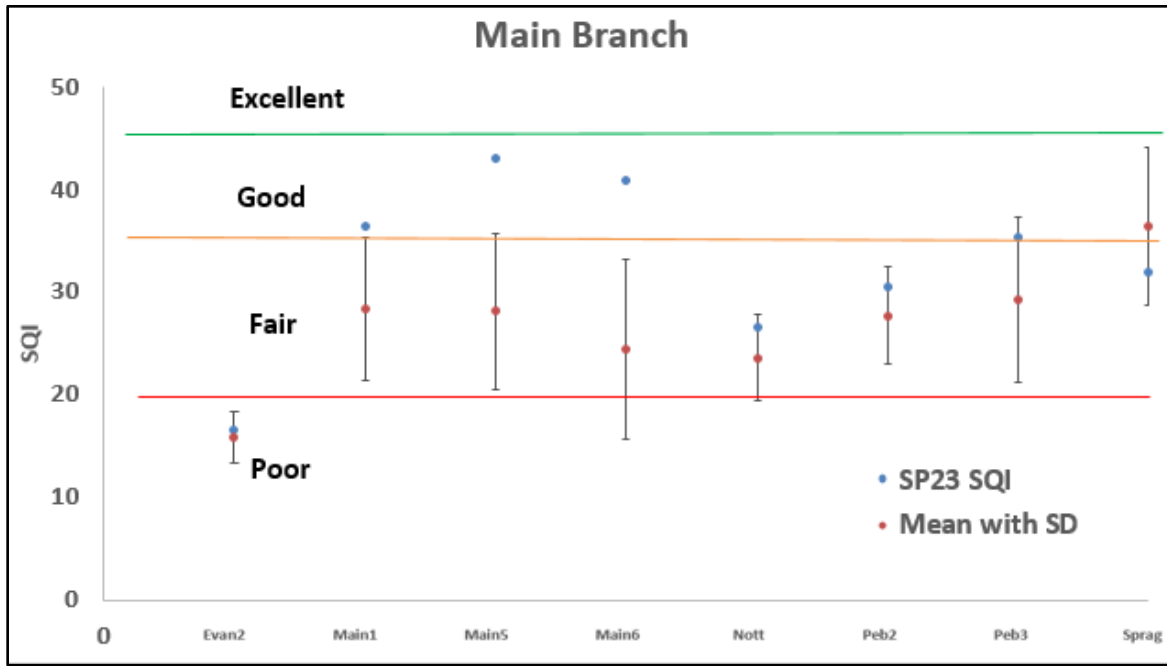




### Main Branch

Eight sites on the Main Branch were sampled, sponsored by Beverly Hills, Southfield and Troy. Four sites had GOOD SQIs, three were FAIR and one POOR, averaging 33 or FAIR. Two sites had GOOD WQRs, four were FAIR and two were FAIRLY GOOD, averaging 6.02 or FAIR. The number of taxa averaged 13 and EPT 2. In comparison to averages for the sites, three sites were above a standard deviation and the rest did not deviate from the average. One site (Main5) had a positive trend when treated individually (Table 2). There was no significant trend for the Main Branch.

Road salt or chloride averaged 310 ppm, at the level that causes chronic problems for aquatic life. Only the two upstream sites (Sprag and Main1) were low enough to have no effect. Evans Creek in Southfield had a dangerously high level at 637 ppm.

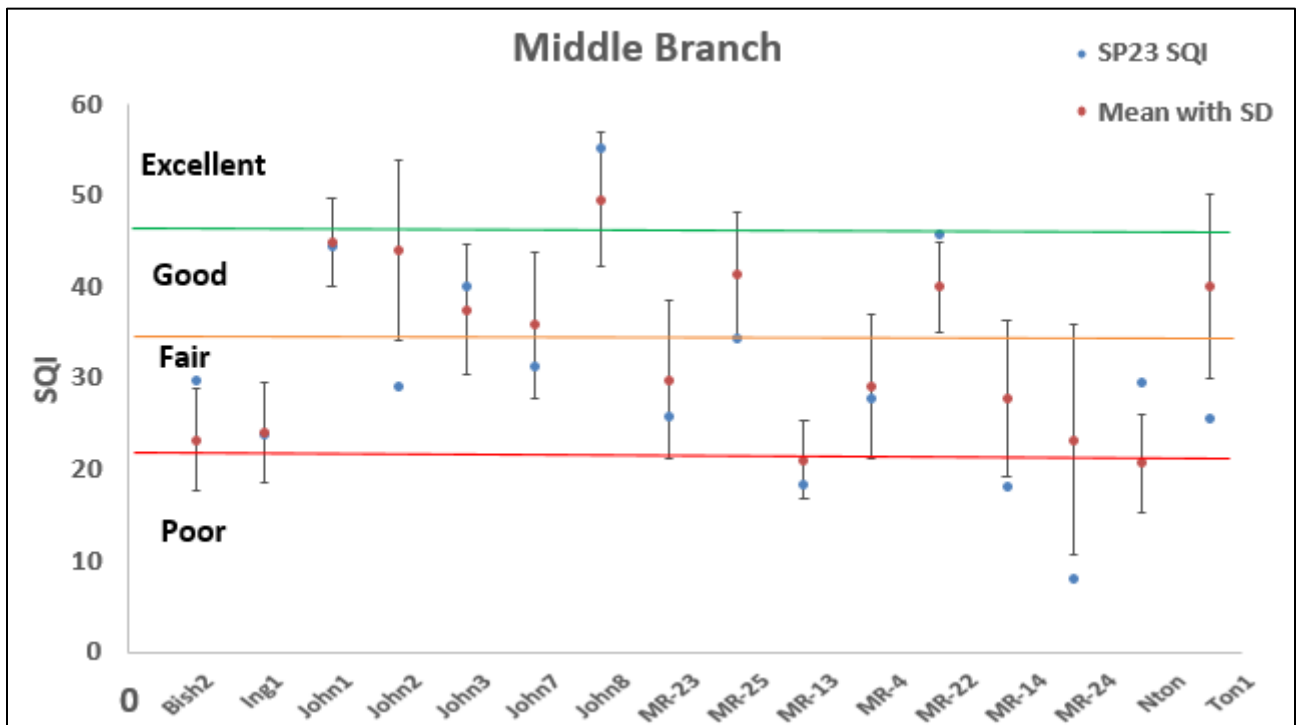
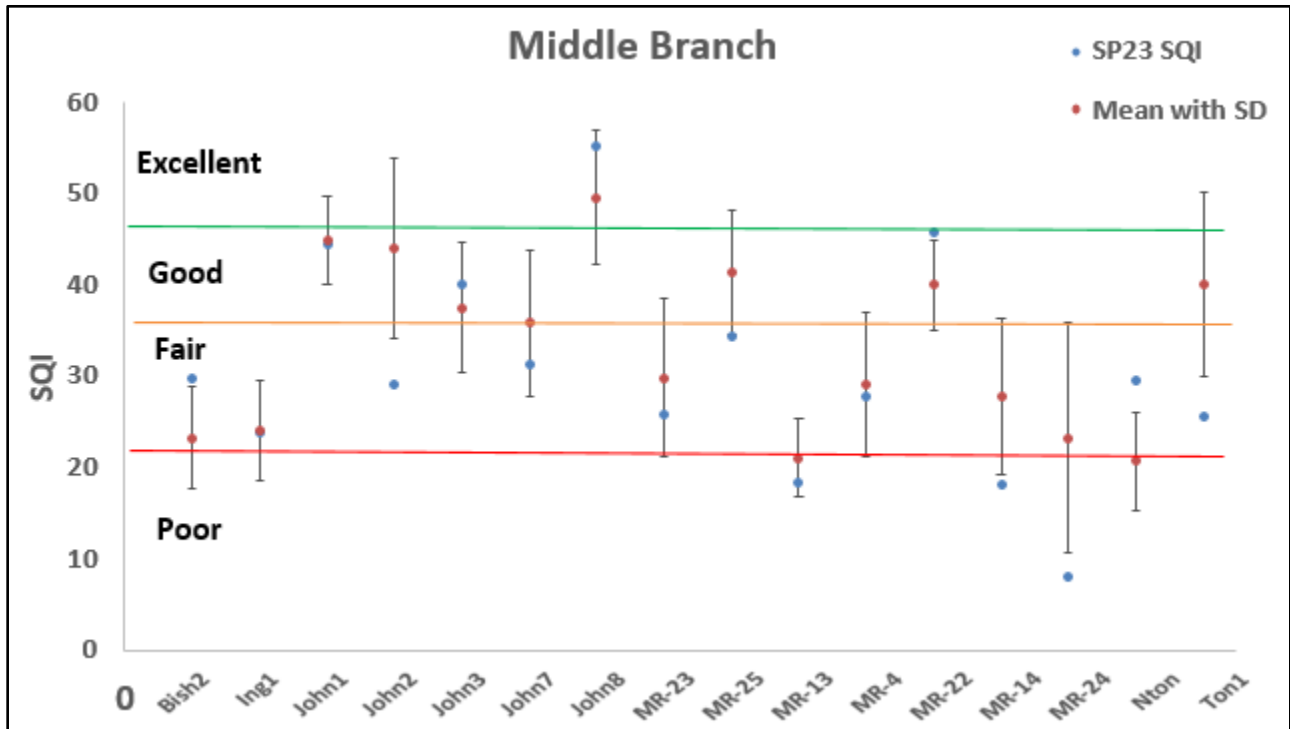


### Middle Branch

Sixteen sites were sampled on the Middle branch, sponsored by Novi, Northville Township, Plymouth, Plymouth Township, and Washtenaw County. One site had an EXCELLENT SQI, four were GOOD, eight were FAIR and three POOR, averaging 30 or FAIR. Five sites had GOOD WQRs, seven were FAIR and four FAIRLY POOR, averaging 5.93 or FAIR. The number of taxa averaged 15 and EPT 3. In comparison to averages for the sites, three sites were above a standard deviation for the site (Bish2, MR-22, Nton) and four were below (John2, MR-14, MR-24, Ton1). One Bishop Creek site and two Tonquish Creek sites had positive trends when considered separately (Table 2). The Middle branch had a positive trend for the Middle 1 and Middle 3 combined as well as separately.



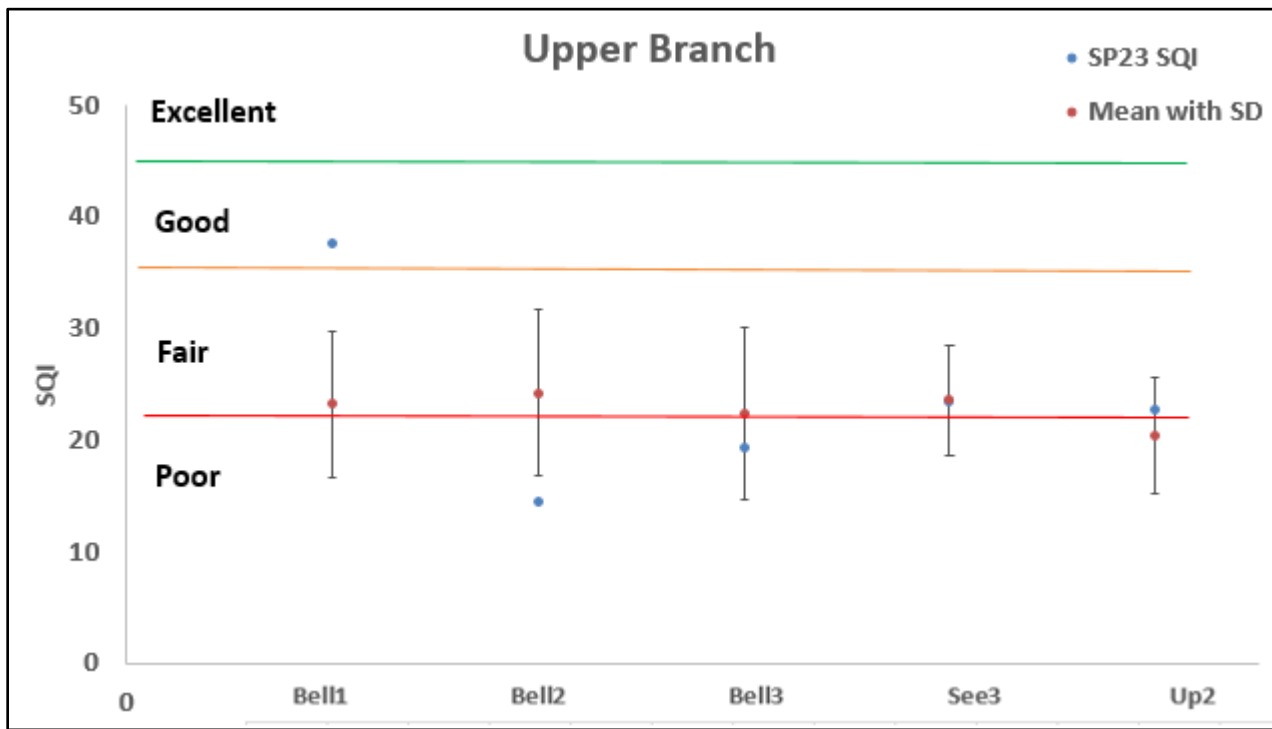
Road salt or chloride averaged 196 ppm, at the level that causes chronic problems for aquatic life. Three sites were in the acute range – Bish2, Nton and MR-24.

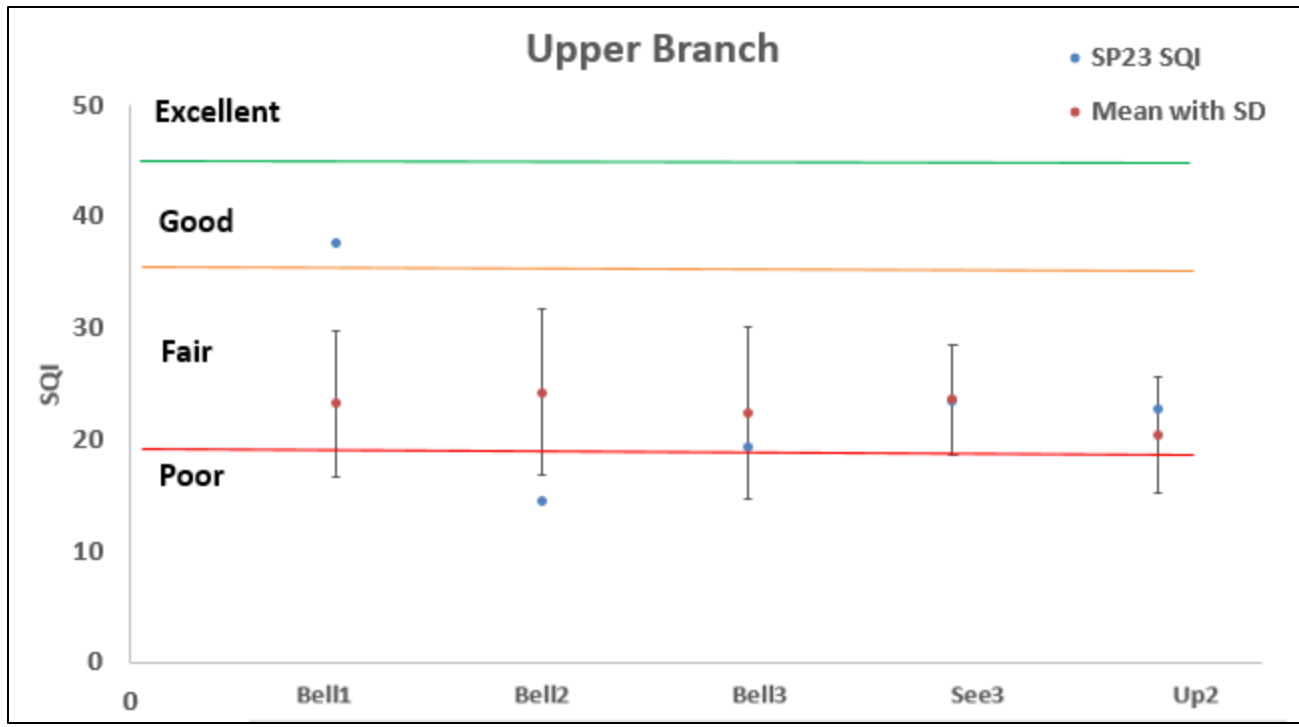


## Upper Branch

Five Upper branch sites were sampled this spring, sponsored by Livonia and Farmington. One site had a GOOD SQI, three were FAIR and one was POOR, averaging a low FAIR at 24. Two sites had GOOD WQRs, one was FAIR and two were FAIRLY POOR, averaging 5.89 or FAIR. The number of taxa averaged 10 and EPT 1. In comparison to past years, SQIs were above a standard deviation for Bell1 and below for Bell2. The Upper did not have any significant trend.

Road salt or chloride averaged 320 ppm, at the level that causes acute problems for aquatic life. Two sites were at the chronic level and three at the acute level.





### Dragonfly Diversity



By Eric Haley - Flickr: Mocha Emerald female, Pulaski Co, 6-26-10, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=17375671>

We were surprised to find some very large dragonfly nymphs this year. Since we regularly preserve specimens, we were able to gather more information about the dragonflies. We sent some specimens to our local dragonfly expert and adjunct curator of Odonata at MSU, Darrin O'Brien. Darrin and his wife, Julie Craves, have been identifying Odonates (dragonflies and damselflies) for many years. In 2021, they identified a Hine's emerald dragonfly, a federally endangered species, in Oceana County and Julie just published a paper on it.

Darrin identified a mocha emerald (*Somatochlora linearis*) and an arrowhead spiketail (*Cordulegaster obliqua*). While neither of these species are listed (endangered or threatened), two of them are quite rare for Wayne County. Thank you to Darrin for

examining our specimens for rare species. Photos of what the adults look are shown here.

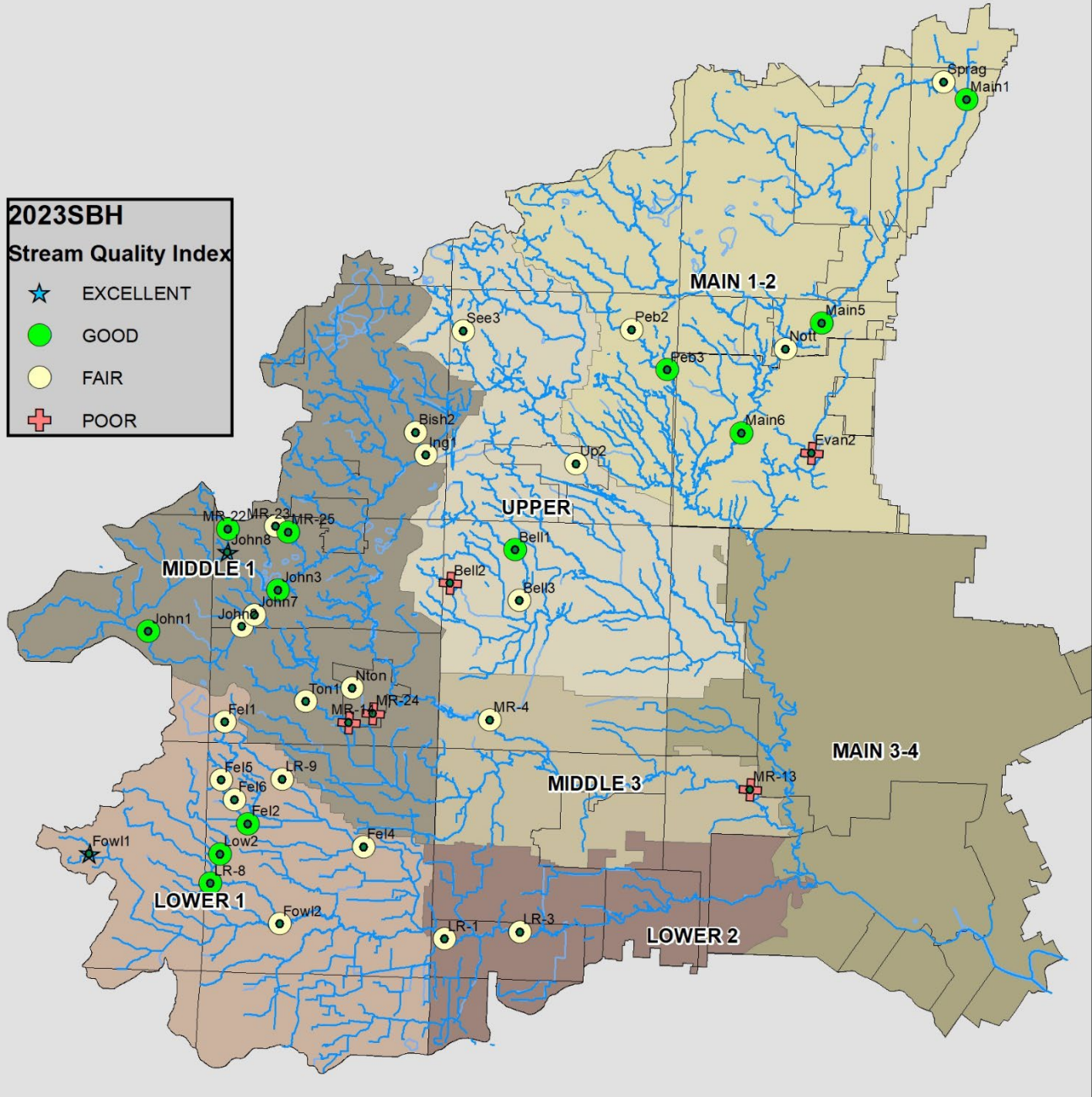


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# 2023 Spring Bug Hunt

**2023SBH**  
**Stream Quality Index**

- ★ EXCELLENT
- GOOD
- FAIR
- ✚ POOR



# 2023 Spring Bug Hunt

**2023SBH**  
**Chloride**

- ◆ < 150 ppm
- ◆ chronic 150-319 ppm
- ◆ acute >320 ppm

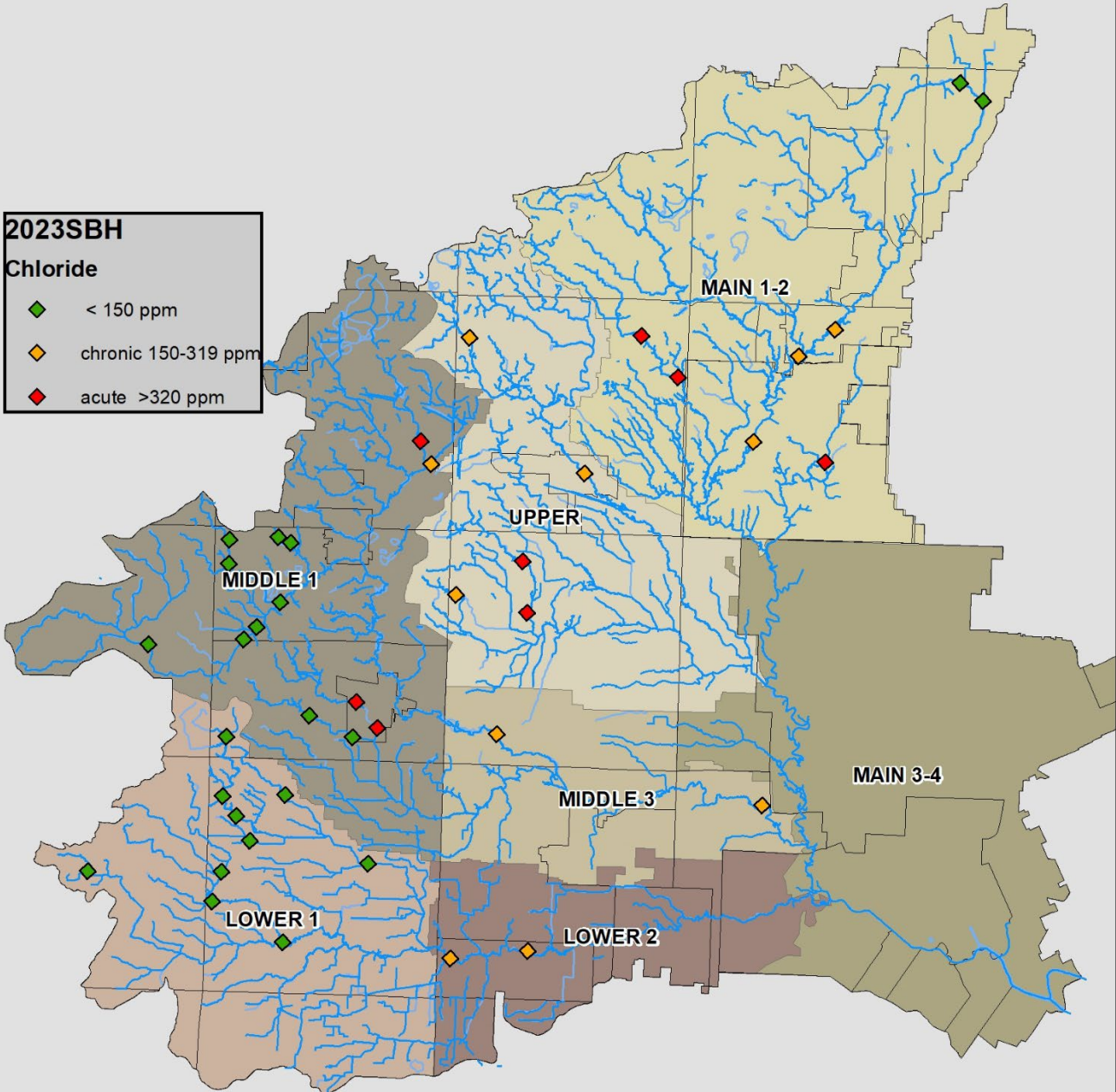




Table 3: Sampling Sites										
Lower Branch										
Stream Name	FIELDID	Site Description	WQR Rating	WQR	SQI	SQI Rating	Taxa	EPT	Chloride	Chloride Rating
Fellows Creek	Fel1	Top of Hill Ct	FAIR	5.61	31	FAIR	16	2	50	OK
Fellows Creek	Fel5	Warren Ridge	GOOD	5.43	26	FAIR	9	1	68	OK
Fellows Creek	Fel6	Hanford	GOOD	5.45	29	FAIR	13	2	85	OK
Fellows Creek	Fel2	Vintage Valley	FAIR	5.99	37	GOOD	15	2	70	OK
Fellows Creek	LR-9	Fellows Beck Warren	FAIRLY POOR	7.00	20	FAIR	9	0	127	OK
Fellows Creek	Fel4	Flodin Pk	FAIR	6.17	23	FAIR	12	1	131	OK
Fowler Creek	Fow1	Prospect	GOOD	4.58	50	EXCELLENT	17	5	30	OK
Fowler Creek	Fow12	Fowler Beck	FAIR	6.07	31	FAIR	15	2	44	OK
Lower Rouge	Low2	Cherry Hill	FAIRLY POOR	6.51	40	GOOD	17	2	44	OK
Lower Rouge	LR-8	Ridge Proctor	GOOD	5.37	36	GOOD	13	2	50	OK
Lower Rouge	LR-1	Commerce Ct	FAIR	5.99	23	FAIR	9	2	157	chronic
Lower Rouge	LR-3	Goudy Park	FAIR	6.30	19	FAIR	8	2	172	chronic
Average			FAIR	5.87	30	FAIR	13	2	86	OK
Main Branch										
Stream Name	FIELDID	Site Description	WQR Rating	WQR	SQI	SQI Rating	Taxa	EPT	Chloride	Chloride Rating
Evans Creek	Evan2	LTU	FAIR	5.76	17	POOR	9	1	637	acute
Nottingham Creek	Nott	Country Day	FAIRLY POOR	6.99	27	FAIR	10	1	230	chronic
Pebble Creek	Peb2	Pebble 13 Mile	FAIR	6.23	31	FAIR	13	1	479	acute
Pebble Creek	Peb3	Pebble d/s Dam	GOOD	5.19	35	GOOD	12	2	479	acute
Sprague Creek	Sprag	Main Lloyd Stage	GOOD	5.10	32	FAIR	14	3	95	OK
Main Rouge	Main1	FF Pk	FAIRLY POOR	6.55	37	GOOD	14	3	95	OK
Main Rouge	Main5	Douglas Evans	FAIR	6.23	43	GOOD	17	1	230	chronic
Main Rouge	Main6	Sfld Civic Ctr	FAIR	6.14	41	GOOD	18	3	238	chronic
Average			FAIR	6.02	33	FAIR	13	2	310	chronic
Middle Branch SQI										
Stream Name	FIELDID	Site Description	WQR Rating	WQR	SQI	SQI Rating	Taxa	EPT	Chloride	Chloride Rating
Bishop Creek	Bish2	Bishop Scarborough	FAIR	5.62	30	FAIR	14	1	631	acute
Ingersoll Creek	Ing1	Brookfarm Park	FAIR	5.81	24	FAIR	15	0	290	chronic
Johnson Creek	John1	5M Salem	FAIR	5.77	45	GOOD	18	5	50	OK
Johnson Creek	John2	5M NV	GOOD	5.28	29	FAIR	23	7	62	OK
Johnson Creek	John7	Arcadia	FAIR	6.09	31	FAIR	14	5	66	OK
Johnson Creek	John3	6M NV	FAIR	5.75	40	GOOD	18	4	85	OK
Johnson Creek	MR-22	Maybury south	GOOD	5.24	46	GOOD	17	4	37	OK
Johnson Creek	MR-23	Maybury north	FAIR	5.60	26	FAIR	13	2	85	OK
Johnson Creek	MR-25	Maybury East	GOOD	5.18	34	GOOD	19	3	95	OK
Johnson Creek	John8	Maybury Angell	GOOD	5.23	55	EXCELLENT	25	7	85	OK
Tonquish Creek	Ton1	Plym Twp Pk	FAIRLY POOR	7.00	26	FAIR	12	3	130	OK
Tonquish Creek	Nton	S Evergreen St	FAIRLY POOR	7.00	30	FAIR	11	2	448	acute
Tonquish Creek	MR-14	Smith Elem	FAIR	6.37	18	POOR	9	1	143	OK
Tonquish Creek	MR-24	Lion's Pk	FAIRLY POOR	7.00	8	POOR	5	0	479	acute
Middle Rouge	MR-4	Levan Knoll	FAIRLY POOR	6.65	28	FAIR	11	2	157	chronic
Middle Rouge	MR-13	Warrendale	GOOD	5.34	18	POOR	9	1	297	chronic
Average			FAIR	5.93	30	FAIR	15	3	196	chronic
Upper Branch										
Stream Name	FIELDID	Site Description	WQR Rating	WQR	SQI	SQI Rating	Taxa	EPT	Chloride	Chloride Rating
Bell Branch	Bell1	Bicentennial Park	FAIR	5.82	38	GOOD	11	1	365	acute
Bell Branch	Bell2	Schoolcraft College	FAIRLY POOR	7.01	15	POOR	8	0	257	chronic
Bell Branch	Bell3	Livonia 6 Mile	FAIRLY POOR	6.81	19	FAIR	9	1	341	acute
Seeley Creek	See3	Kennedy Ct	GOOD	4.63	24	FAIR	11	1	318	chronic
Upper Rouge	Up2	Shiawasee Park	GOOD	5.18	23	FAIR	10	1	318	chronic
Average			5.89	24	FAIR	10	1	320	acute	

Thank you to all the **volunteers, Wayne County** and **Sue Thompson** for sampling additional sites, identifying difficult specimens and doing the trend analysis, and **Deirdre Devlin** and **Schoolcraft College** students for sampling one site.

This program is supported by the Erb Family Foundation, EGLE, Washtenaw County, the City of Southfield, the City of Troy, the Village of Beverly Hills, Northville Township, the City of Plymouth, Plymouth Township, the City of Novi, the City of Livonia, Canton Township and the City of Farmington.

**Fall Bug Hunt**  
**Oct. 14, 2023 9 am-4pm**  
**Sign up online today (deadline Sept. 29, 2023 at [www.therouge.org](http://www.therouge.org))**

This fall, we made the decision to return to a central gathering to start the Bug Hunts like we did prior to Covid. Rather than meeting out in the field, volunteers will come to the Plymouth Cultural Center, meet their team, enjoy refreshments and an introduction to the hunt, and head out from there. Holding it this way means people can meet all of the rest of the volunteers and it makes it easier for us to make adjustments so that each team has enough volunteers. For those who would rather meet in the field, that can still be arranged.

**Team Leader Training – Sat. Sept. 30, 2023 9am-3pm (must have participated in a previous event)**

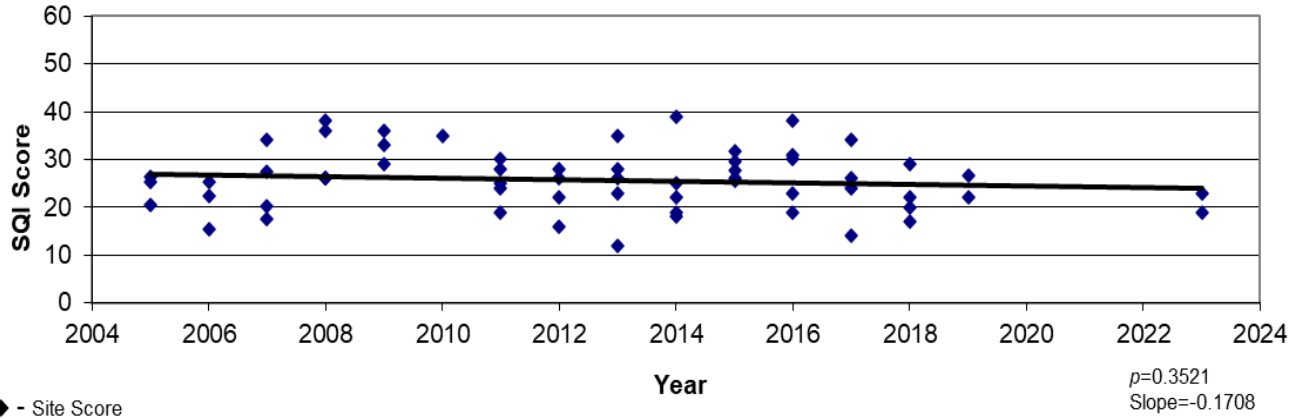
We are always in need of people willing to train and act as Team Leaders for Bug Hunts and Stonefly Searches. If you have attended an event before and would like to train to become a team leader, please sign up for the fall training.

## **Trend Graphs**

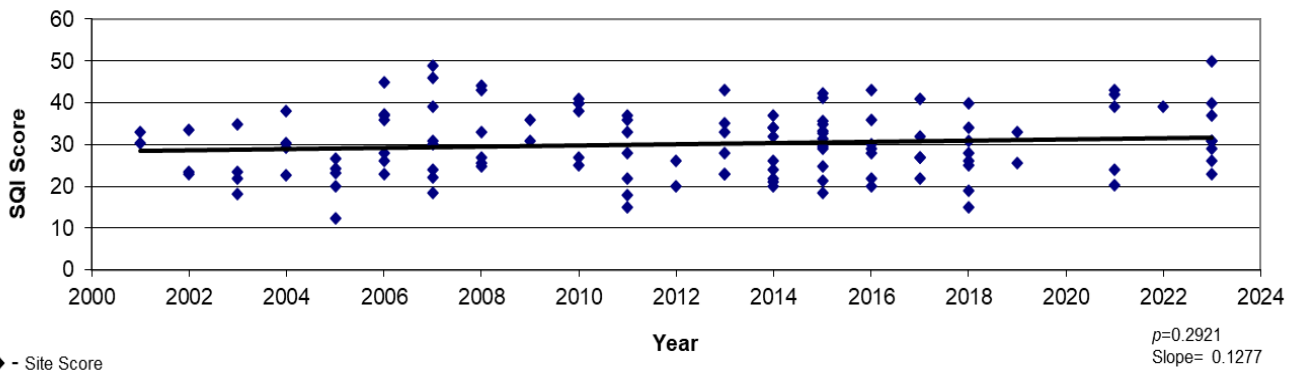


# Lower Branch

### Rouge Lower 2 Storm Water Management Area Macroinvertebrate Data Trend Spring 2005- 2023 All Sites (Friends of the Rouge and Wayne County)

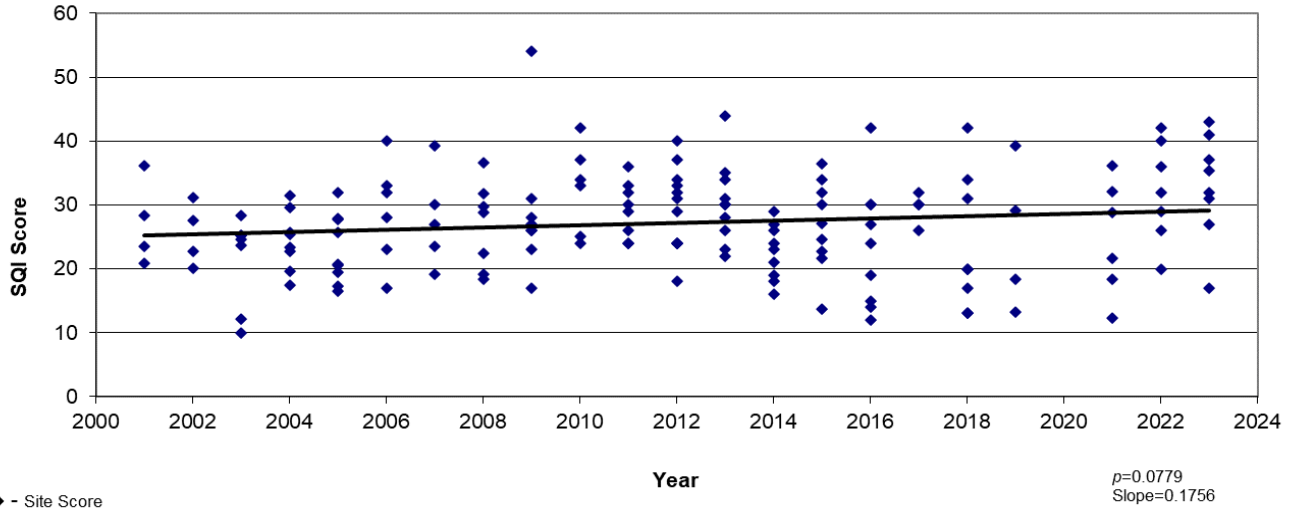


### Rouge Lower 1 Storm Water Management Area Macroinvertebrate Data Trend Spring 2001- 2023 All Sites (Friends of the Rouge and Wayne County)

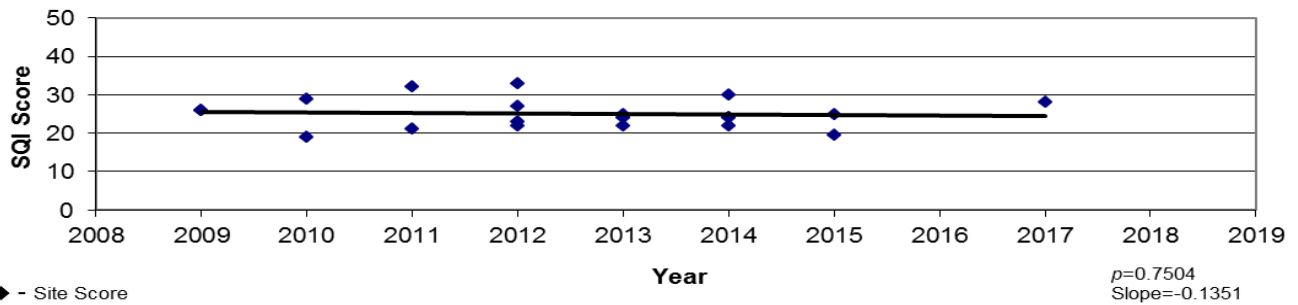


# Main Branch

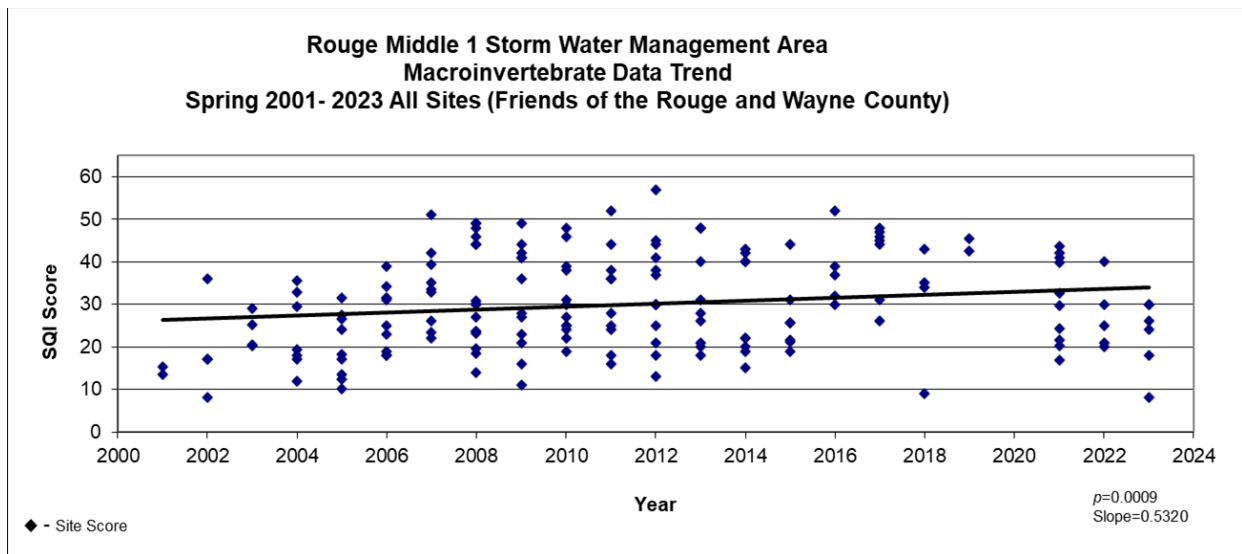
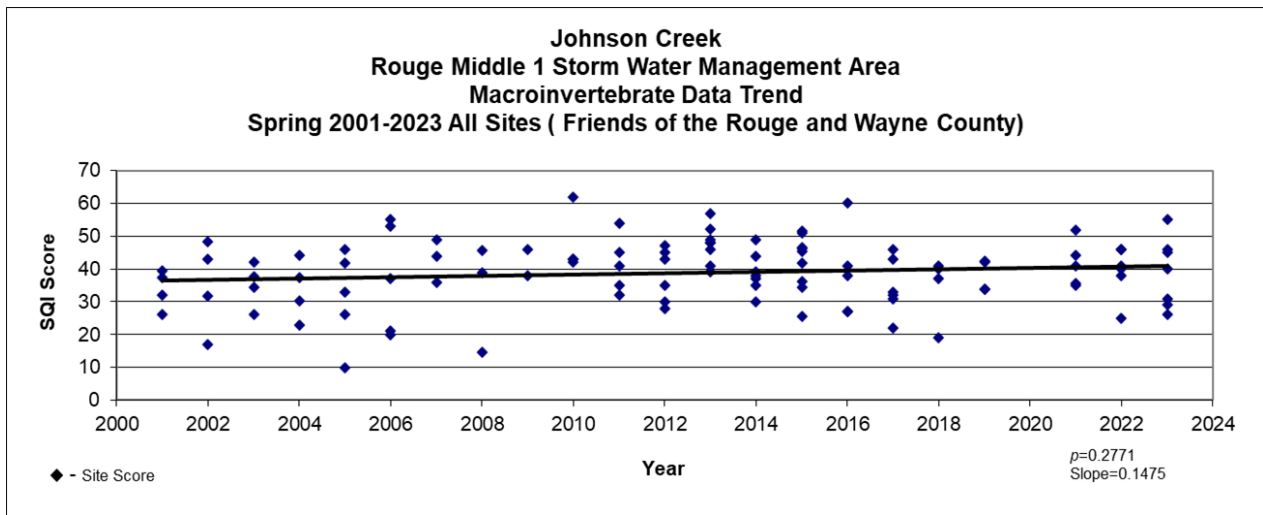
### Rouge Main 1-2 Storm Water Management Area Macroinvertebrate Data Trend Spring 2001-2023 All Sites (Friends of the Rouge and Wayne County)



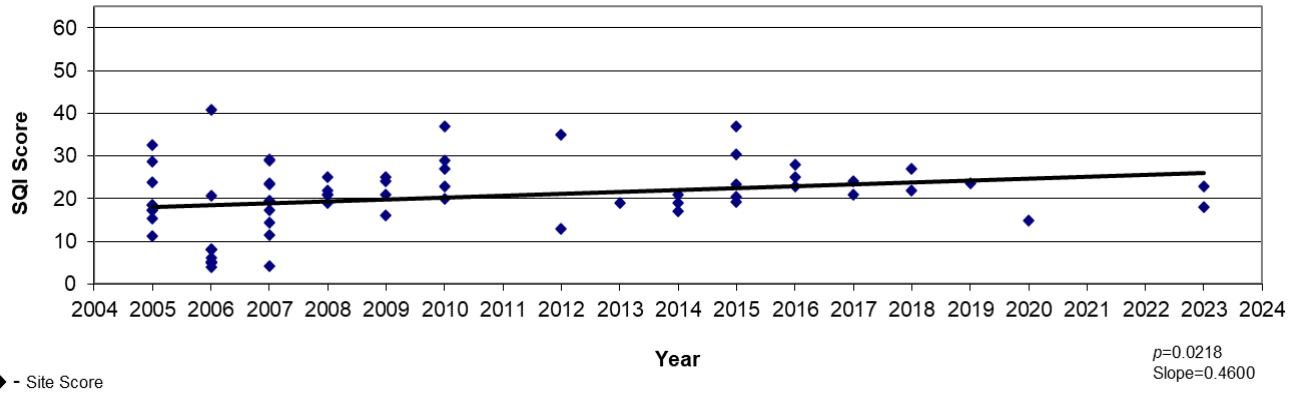
### Main 3-4 Storm Water Management Area Macroinvertebrate Data Trend Spring 2009-2019 All Sites (Friends of the Rouge and Wayne County)



## Middle Branch



**Rouge Middle 3 Storm Water Management Area  
Macroinvertebrate Data Trend  
Spring 2005- 2023 All Sites (Friends of the Rouge and Wayne County)**



**Upper Branch**

**Upper Rouge Storm Water Management Area  
Macroinvertebrate Data Trend  
Spring 2002- 2023 All Sites (Friends of the Rouge and Wayne County)**

