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Rouge River Benthic Monitoring Program Spring 2010 Report

This report covers benthic macroinvertebrate sampling at 48 sites on Rouge River tributaries and branches in the spring of 2010. Twenty-six sites were sampled by Friends of the Rouge (FOTR) volunteers and staff, 21 sites were sampled by Wayne County

Department of Public Service Water Quality Management Division, and one site was sampled by Schoolcraft College students. Most of Friends of the Rouge's sites were sampled on April 24 & 25 during the Spring Bug Hunt in which 110 volunteers participated.

Benthic Scores

Each site is given a quality score 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 quality score 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.

Sensitive Families refers to insects that are rated 1 on the Hilsenhoff Sensitivity Index.

Overall Scores

The highest score for any site in the watershed in all ten years of Friends of the

Rouge's sampling on the Rouge River was 62 (excellent) at Sump Drain (John8), a tributary to the Johnson Creek that runs through Maybury State Park (see Table 1). An additional site on Fellows Creek at Warren and Beck (LR-9) also rated excellent with a score of 53. The average score for all sites was 32 or fair and most sites scored fair. Only one site had a poor score – Tarabusi Creek at 7 Mile Rd (UR-3), a tributary to the Upper Rouge.

Thirty seven sites had three or more years of data so the means could be compared. Of these, 6 were above one standard deviation of the mean for the site. No sites were below a standard deviation.

Sensitive Families were found at eleven sites (see Table 2). Nemourid broadback stoneflies which previously had only been

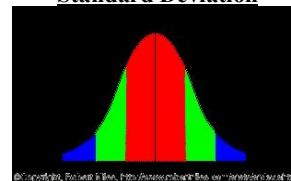
found at one site in the Johnson Creek (John1) were also found in Sump Drain (John8) as well as in Fellows Creek (LR-9). Rhyacophilid (free-living) caddisflies were found for the first time in the Johnson Creek (John1). Biologist Bruce McCulloch identified the Rhyacophilids to species - *Rhyacophila lobifera* – and also found that we may be the first to find and identify this species in Michigan! (see below article by Bruce McCulloch)

Pronggill mayflies (Leptophlebiidae) were found for the first time at Fel2 as well as at John8, raising the number of known sites with this family from 5 to 7. Clubtail dragonflies (Gomphidae) continue to thrive at only one site in Troy (Sprag). Dobsonflies (Corydalidae) were also found there, making Sprague Creek one of only seven known sites with dobsonflies in the Rouge River watershed.

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. The program is supported, in part, by the Alliance of Rouge Communities and in cooperation with Wayne County Department of Public Services Water Quality Management Division.

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 1-5, 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.

Free-living Caddisfly (*Rhyacophila lobifera*) Likely a New Record for the State by Bruce McCulloch

In the Spring 2008 Report, I wrote an article describing the first recorded specimen of a predacious caddisfly (*Rhyacophila lobifera*; Family Rhyacophilidae) in the Rouge River watershed. It was collected in the Lower Rouge at Cherry Hill and Ridge roads (Low2). The individual was large, likely in its last instar stage. At the time of that article, I did not realize that not only was it a new species for the Rouge, but also likely a new species for Michigan. According to the Aquatic Insects of Michigan website (maintained until recently by Ethan Bright), *Rhyacophila lobifera* has been found in Ohio, Indiana, Illinois

and the province of Ontario, but is not listed as occurring in Michigan. Given its occurrence in these adjacent or nearby states/province, its occurrence in Michigan is not surprising. The story doesn't quite end there. Re-examination of a collection made at the same Lower Rouge site in spring 2003 revealed another specimen, which was smaller than the one collected in 2008. Then on March 3, 2010, FOTR staff Cyndi Ross, Emily Hughes, Wayne Roper and Randi Fires collected a third specimen at a different site and branch of the watershed (Johnson Creek at 5 Mile and Salem roads/Middle Branch-John1). This specimen was intermediate in length to the aforementioned two individuals.

Rhyacophilid caddisflies are free-ranging and lack cases until the fifth (and final) instar, when a crude dome-like case is built for pupation (Waters 2000). Most Rhyacophilids occupy cool running waters, where they forage under rocks for prey such as other caddisflies, black fly larvae (Wiggins 2004) and fish eggs (Voshell 2002). Other members of this family, however, feed on algae and vascular plants (Wiggins 2004). Characteristics of this family include: abdominal segments separated by prominent constrictions; presence of a dorsal sclerite (plate) on the last abdominal segment; and prominent anal prolegs each with a large claw (Wiggins 2004). Most Rhyacophilid caddisflies are bright green when alive but take on a purple hue when placed in alcohol (Voshell 2002). Fly fishers refer to members of this family as green sedges (Troutnut website). While the family as a whole is classified as "sensitive", some members such as *Rhyacophila lobifera* can inhabit intermittent streams (CTAP website), where diapausing eggs bridge the dry phase and allow the life cycle to continue (Wiggins 2004). When the site on the Lower Rouge was sampled in the fall of 2008, the section of streambed where sampling usually occurs was in fact dry, so sampling was conducted downstream where water was present.

Literature Cited

- Bright, E. 2007. Aquatic Insects of Michigan. Museum of Zoology Insect Division and School of Natural Resources and Environment University of Michigan.
- Critical Trends Assessment Program website, Champaign, Illinois (http://ctap.inhs.uiuc.edu/indexValue_EPT/EPT_index_value.asp?siteID=006401S)
- Troutnut Website (<http://www.troutnut.com/hatch/3136/Caddisfly-Rhyacophila-Green-Sedges>)
- Voshell, J. R. Jr. 2002. A Guide to Common Freshwater Invertebrates of North America. The McDonald & Woodward Publishing Company. Blacksburg, VA. 442 pp.
- Waters, T.F. 2000. Wildstream: A Natural History of the Free Flowing River. Riparian Press. St. Paul MN. 608 pp.
- Wiggins, G.B. 2004. Caddisflies: The Underwater Architects. University of Toronto Press. Toronto, ON. 292 pp.

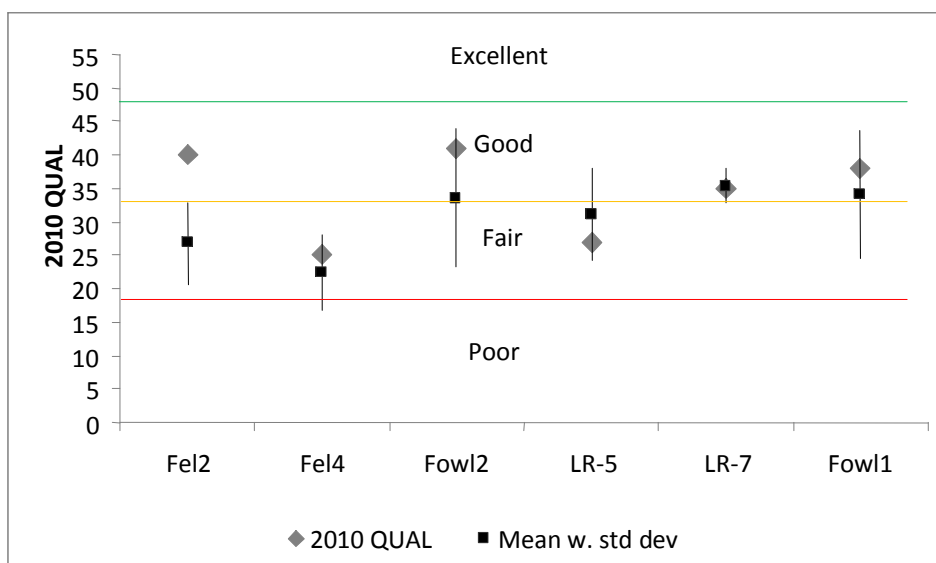
Lower Branch

Eight sites were sampled on the Lower Branch of the Rouge (see Table 1). Three tributaries were sampled: Delaney Creek (LR-7), Fellows Creek (Fel2, Fel4, LR-5 & LR-9), Fowler Creek (Fowl1 & Fowl2) and one site on the main branch of the Lower (LR-8). One site scored EXCELLENT (LR-9), five of the sites scored GOOD and two scored FAIR. There were no POOR scores on the Lower branch. Six of the sites had enough past data to compare scores (see Chart 1). All were within one standard deviation of the mean with the exception of Fel2 which scored above a standard deviation of the mean.



Creek Chub found at Flodin Park (Fel4)
photo credit: M. Gruelle

Chart 1: 2009 Lower Branch Scores with Standard Deviation



Delaney Creek

Delaney Creek (LR-7) near Hannan and Ecorse Roads in Romulus had an average score and number of taxa (17) for the site. This site varies little over time.

Fellows Creek

Four sites on the Fellows Creek tributaries were sampled. The upstream sites rated EXCELLENT (LR-9) and GOOD (Fel2). Sensitive families were found at both LR-9 and Fel2 (see Table 2) with Perlodid stoneflies at both sites. At Fel2, the team led by Martha Gruelle and Al Sadler also found prongill mayflies (Leptophlebiidae). The downstream sites (Fel4 & LR-5) both scored FAIR. LR-5 was sampled during Rouge Rescue on June 5 so that cleanup volunteers could see the life in the stream.

Fowler Creek

Fowler Creek was sampled at two locations (Fowl1 & Fowl2) and both had GOOD scores. The team that sampled both sites, led by biologists Bruce McCulloch and Andrew Tluczek, found a very high number of EPT (mayflies, stoneflies & caddisflies) including a seldom seen type of stonefly at Fowl2 – Nemourid broad-backed stoneflies.

Lower

Only one main Lower branch site was sampled – an upstream site at Ridge & Proctor (LR-8). The site, sampled by Wayne County staff, rated GOOD with 18 taxa, 4 EPT and the sensitive Perlodid stoneflies.

Main Branch

Nine sites on the Main Branch were sampled. Three were on tributaries: Franklin, Murphy, and Sprague Creeks. Scores ranged from FAIR to GOOD. Eight sites had three years of data and of these, Main3 and Main4 were above one standard deviation of the mean.

Franklin Creek

Two Franklin Creek sites (Frank1 & Frank2) were sampled by a team led by Laura Steiner and Miles Robinson. Both scored FAIR and showed no change from past sampling.



Josh Eisenman at Mur2
photo credit: Susan Guenther

Murphy Creek

Murphy Creek (Mur2) was sampled the day after the Bug Hunt by a group from Roeper School led by team leaders Bill Eisenman, Miles Robinson and Tom Steiner. Despite the rain overnight, the site had a FAIR score, showing no change.

Sprague Creek

Sprague Creek (Sprag) in Troy was sampled near the Lloyd Stage Nature Center during the Team Leader training and it had a GOOD score. Sensitive clubtail dragonfly larvae and dobsonfly larvae were found there again.



Chester Marvin demonstrates the riffle dance at Frank1
photo credit: C. Marvin?

Chart 2: Franklin, Murphy, and Sprague Creeks and the Main Rouge Scores and Standard Deviation



Main 4 & Main4.5 Team self-portrait
photo credit: Josh Springer

Main

Five sites were sampled on the Main Branch. The upstream sites (Main3 & Main4) both had GOOD scores and were above a standard deviation of the mean for the sites. Further downstream at Fairway Park (Main4.5), team leaders Michael Mogill, Sherrie & Josh Springer still found 3 EPT and the site had a high FAIR score (33).

Wayne County sampled two bigger river sites at Eliza Howell Park near Fenkell (MN-2) and at Eight Mile (MN-1). Both sites scored FAIR but MN-1 had more taxa than the upstream MN-2. MN-1 is the site where a *Taeniopteryx* (broad-backed) stonefly was found during the Winter Stonefly Search. This was the first stonefly ever found in the Main Rouge or any of its tributaries AND the first time we had ever found *Taeniopteryx* stoneflies.

Middle Branch

Twenty-one sites were sampled on the Middle branch including four tributaries: Bishop, Johnson, Tonquish, and Walled Lake Creeks. Sites ranged from FAIR to GOOD with one EXCELLENT score. Eighteen sites had enough past data to do comparisons. Of these, two were above a standard deviation of the mean (John6 & Wall2)

Bishop Creek

Bishop Creek (Bish2), sampled by Cyndi Ross and Jon Phipps, had a FAIR score and showed little change.

Johnson Creek

Four Johnson Creek sites were sampled this spring and two were new sites on a tributary to the Johnson Creek called Sump Drain (John8 & MR-22). Team leader and Wayne County employee Sue Thompson discovered this creek that flows through Maybury State Park through her frog & toad survey work in the park. John8 had the highest score ever since FOTR started sampling! There were two types of stoneflies (Perlodid and Nemourid) as well as prongbill mayflies.



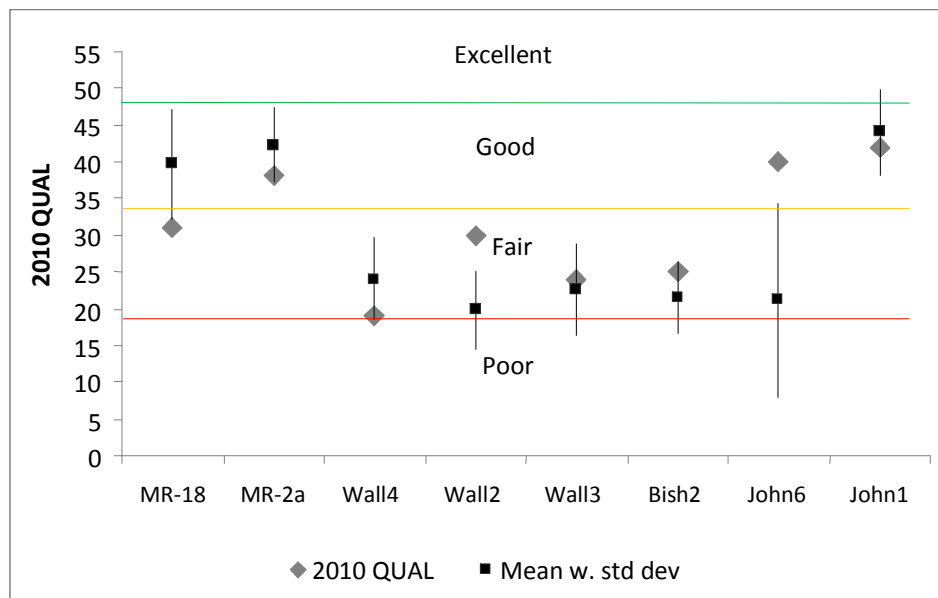
Wall2 Team
photo credit: Cyndi Ross

John1 was sampled earlier in March by FOTR staff during a training session. The site also had three sensitive species including the possibly new species for the state – *Rhyacophilid* caddisflies. John6, just before the confluence with the Middle Rouge, did not have any of these sensitive species but did score well above a standard deviation of the mean for the site.

Walled Lake Drainage

In the Walled Lake Drainage system, three sites were sampled. All three (Wall2, Wall3, Wall4) were in the FAIR range. The Wall2 site was above a standard deviation for the mean. At Wall4, JoAnne Dudek and Melissa Erickson's team was surprised to find only 7 taxa despite large boulders and fast moving water.

Chart 3: 2009 Bishop & Johnson Creek, Walled Lake Drainage & Middle Scores with Standard Deviation



Tonquish Creek

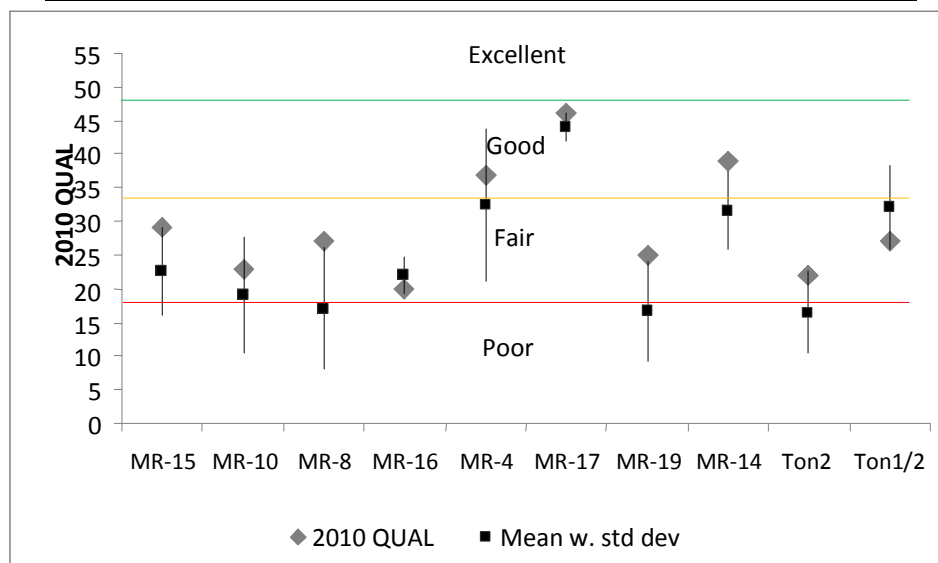
The Tonquish Creek was sampled at five sites. MR-14 (Smith Elementary) scored GOOD while the other four were FAIR Steve Weis and Laura Corsun found little change at Ton1/2 and Ton2 with FAIR scores. Further downstream, MR-19 and MR-16 showed no change. This Creek has had some POOR scores in the past so it is hopeful not to see a decline.



Middle Branch

There were eight sites on the Middle Branch. Scores were all within a standard deviation of the mean though the upstream sites trended lower than average (MR-2a & MR-18) and the downstream sites trended higher (MR-17, MR-4, MR-8, MR-10, MR-15).

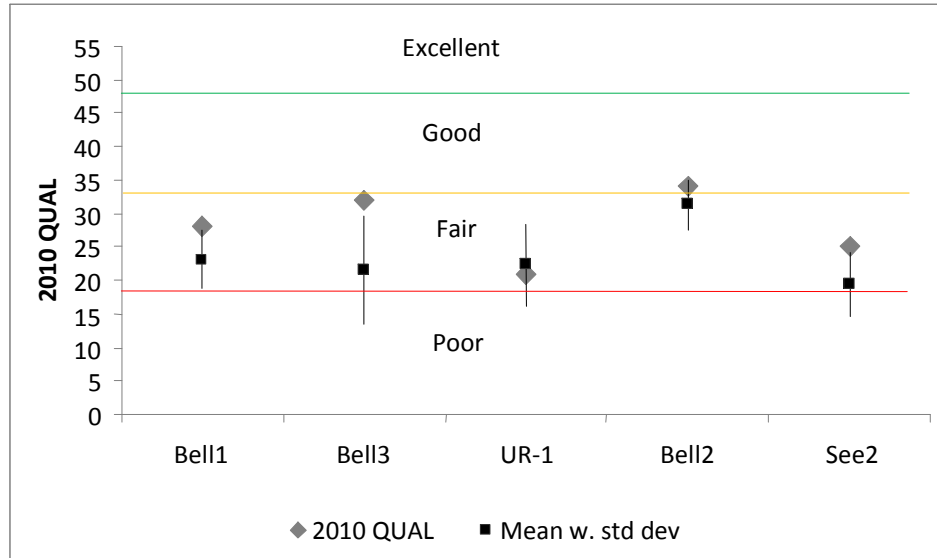
Chart 4: Tonquish Creek and Middle Rouge Scores and Standard Deviation



Upper Branch

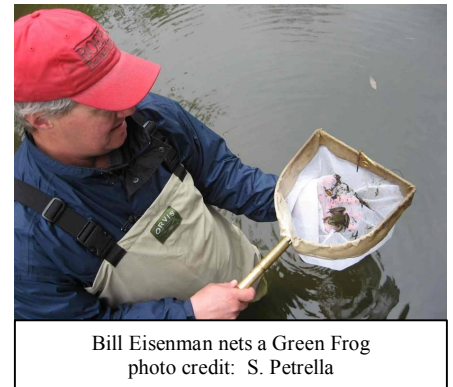
Ten Upper branch sites were sampled this spring, including four tributaries: Bell, Minnow Pond, Seeley & Tarabusi Creeks. Most sites scored FAIR (8) and one sites scored GOOD (Bell2). The only POOR score in the watershed was at UR-3 (Tarabusi Creek). There were no sensitive families found in the Upper branch or its tributaries. Of the five sites with past data, one scored above a standard deviation of the mean (Bell3).

Chart 5: Bell, Minnow Pond, Seeley and Tarabusi Creeks and the Upper Rouge Scores and Standard Deviation



Bell Branch

Bell Creek showed some improvement this spring. Bell2 at Schoolcraft College sampled by students was GOOD rather than FAIR for the second spring in a row. Bell1 and Bell3 were resampled by team leaders due to the loss of some specimens. Bell3 was above a standard deviation of the mean. A large mussel was found at Bell1 and team leader Bill Eisenman was surprised to net a green frog (see photo at left)! This site is getting a buffer zone planted so should show even more improvement over time.



Bill Eisenman nets a Green Frog
photo credit: S. Petrella

Minnow Pond Creek

Doug & Sandy Wallace led a team that sampled Minnow Pond both at Dunckel Middle School (Min3) and Oakland Community College. Both sites rated FAIR.



Seeley Creek Sleepy Hollow site (See2)
Photo credit: Dan Beckett
www.dbeckett.com/photos

Seeley Creek

Both Seeley Creek sites scored FAIR and had 2 EPT. Team leaders Lisa Austin and Jeff Vallender were surprised to find mayflies and caddisflies at See3 and two types of caddisflies at See2 (Sleepy Hollow). See2 has had a POOR score in the past so this was a good sign. The See3 site was resampled due to concerns over slumping banks at the site.

Tarabusi Creek

Tarabusi Creek (UR-3) had the only POOR score in the watershed. Only six taxa were found.

Upper Rouge

Lola Valley Park (UR-1) showed no change from the average with a FAIR score, 8 taxa and 2 EPT.



damselfy larvae

THANK YOU!!!!

Thank you to all the **volunteers** and **Team Leaders**, **Schoolcraft College**, **Wayne County**, especially **Sue Thompson** for sampling and providing data for 21 sites, **Krispy Kreme** for giving us half price donuts, **Bruce McCulloch** for identifying our bugs, graphing data and advising us, **Andrew Tluczek** for identifying bugs, **University of Michigan-Dearborn** for providing the meeting place for the Spring Bug Hunt and a lab for identification night, and the **Alliance of Rouge Communities** for funding the program.

Join us for the
Fall Bug Hunt
Oct. 16, 2010

Schoolcraft College VisTaTech Center
9am-4pm

Sign up online today

www.therouge.org

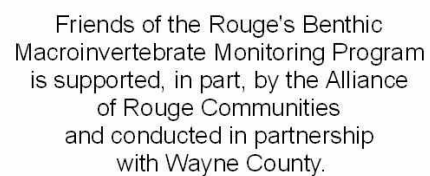


Table 1: Spring 2010 Rouge Benthic Macroinvertebrate Monitoring Results										
Branch	Creek	FIELDID	Site Location	Sampling Date	Agency	Rate	Score	Total # Taxa	EPT	# Sens Fam
Lower	Delaney	LR-7	Ecorse & Hannan	17-May	WC	35	good	17	1	0
Lower	Fellows	Fel2	Ford/Ridge	24-Apr	FOTR	40	good	14	3	2
Lower	Fellows	Fel4	Flodin Pk	24-Apr	FOTR	25	fair	11	0	0
Lower	Fellows	LR-5	Lotz & Palmer	5-Jun	WC	27	fair	15	1	0
Lower	Fellows	LR-9	Warren & Beck	17-May	WC	53	exc	21	3	1
Lower	Fowler	Fowl1	Prospect/Cherry Hill	24-Apr	FOTR	38	good	17	6	1
Lower	Fowler	Fowl2	Beck Road, N of Geddes	24-Apr	FOTR	41	good	16	5	1
Lower	Lower	LR-8	Ridge & Proctor	17-May	WC	40	good	18	4	1
Main	Franklin	Frank1	Franklin Cider Mill	24-Apr	FOTR	23	fair	9	1	0
Main	Franklin	Frank2	Inkster & Farmington	24-Apr	FOTR	25	fair	9	2	0
Main	Main	Main3	Booth Park	25-Apr	FOTR	37	good	12	2	0
Main	Main	Main4	B'ham-15 Mile	24-Apr	FOTR	34	good	16	2	0
Main	Main	Main4.5	Fairway Park	24-Apr	FOTR	33	fair	14	3	0
Main	Main	MN-1	Eight Mile	28-May	WC	29	fair	11	2	0
Main	Main	MN-2	Eliza Howell	28-May	WC	19	fair	7	1	0
Main	Murphy	Mur2	Roeper School	25-Apr	FOTR	33	fair	13	1	0
Main	Sprague	Sprag	Lloyd Stage	21-Mar	FOTR	42	good	17	3	2
Middle	Bishop	Bish2	10 Mile/Meadowbrook	24-Apr	FOTR	25	fair	10	1	0
Middle	Johnson	John1	5 Mile/ Salem	3-Mar	FOTR	42	good	13	6	3
Middle	Johnson	John6	Hines/Sheldon	24-Apr	FOTR	40	good	16	4	0
Middle	Johnson	John8	7 Mile & Napier S	24-Apr	FOTR	62	exc	26	7	3
Middle	Johnson	MR-22	7 Mile & Beck	24-Apr	WC	40	good	17	3	1
Middle	Middle	MR-10	Parr Rec Area	28-Apr	WC	23	fair	9	2	0
Middle	Middle	MR-15	Ford Road/Outer Drive	28-Apr	WC	29	fair	14	2	0
Middle	Middle	MR-17	I-275 clam bar	28-Apr	WC	46	good	17	4	0
Middle	Middle	MR-18	Springbrook Rec Area	28-Apr	WC	31	fair	14	5	0
Middle	Middle	MR-20	Waterford Bend	28-Apr	WC	48	good	18	4	0
Middle	Middle	MR-2a	Reservoir Road West	28-Apr	WC	38	good	15	4	0
Middle	Middle	MR-4	Levan Knoll	28-Apr	WC	37	good	15	2	0
Middle	Middle	MR-8	Inkster Road	28-Apr	WC	27	fair	11	2	0
Middle	Tonquish	MR-14	Smith Elementary	5-May	WC	39	good	20	1	0
Middle	Tonquish	MR-16	W of Ann Arbor Trail/Hines	28-Apr	WC	20	fair	8	1	0
Middle	Tonquish	MR-19	Joy Rd	5-May	WC	25	fair	10	1	0
Middle	Tonquish	Ton1/2	Canton Ctr	24-Apr	FOTR	27	fair	10	2	0
Middle	Tonquish	Ton2	Ann Arbor Rd/Lilley	24-Apr	FOTR	22	fair	11	1	0
Middle	Walled Lk	Wall2	10 Mile/Novi	24-Apr	FOTR	30	fair	11	1	0
Middle	Walled Lk	Wall3	12 Mile/Taft	24-Apr	FOTR	24	fair	10	1	0
Middle	Walled Lk	Wall4	Northville/Main Street	24-Apr	FOTR	19	fair	7	1	0
Upper	Bell	Bell1	Bicentennial Park	18-May	FOTR	28	fair	13	2	0
Upper	Bell	Bell2	Schoolcraft College	22-Apr	Sch	34	good	14	1	0
Upper	Bell	Bell3	6 Mile/Farmington	18-May	FOTR	32	fair	10	2	0
Upper	Bell	UR-2	Bell Creek Park	20-May	WC	21	fair	7	0	0
Upper	Minnow Pond	Min2	Oakland Community College	24-Apr	FOTR	23	fair	11	1	0
Upper	Minnow Pond	Min3	Dunckel Middle School	24-Apr	FOTR	25	fair	9	2	0
Upper	Seeley	See2	Sleepy Hollow	24-Apr	FOTR	25	fair	9	2	0
Upper	Seeley	See3	Kennedy Court	18-May	FOTR	33	fair	13	2	0
Upper	Tarabusi	UR-3	Tarabusi at 7 Mile	20-May	WC	17	poor	6	0	0
Upper	Upper	UR-1	Lola Valley - Kinloch	20-May	WC	21	fair	8	2	0

Notes	
Agency: FOTR=Friends of the Rouge, Sch=Schoolcraft College, WC=Wayne County DPS-WQMD	
EPT: # families of mayflies (Ephemeroptera), stoneflies (Plecoptera), caddisflies (Trichoptera)	
# Sens families: # families that score 1 on Hilsenhoff Sensitivity Index	

Table 2: Sensitive Families Found					
Branch	Creek	FIELDID	Fam 1	Fam 2	Fam 3
L	Fellows	Fel2	Perlodidae (Perlodid stonefly)	Leptophlebiidae (pronggill mayfly)	
L	Fellows	LR-9	Perlodidae (Perlodid stonefly)		
L	Fowler	Fow1	Perlodidae (Perlodid stonefly)		
L	Fowler	Fow2	Nemouridae (broad-backed stonefly)		
L	Lower	LR-8	Perlodidae (Perlodid stonefly)		
M	Johnson	John1	Capniidae (slender winter stonefly)	Rhyacophilidae (free-living caddisfly)	Leptophlebiidae (pronggill mayfly)
M	Johnson	John8	Perlodidae (Perlodid stonefly)	Nemouridae (broad-backed stonefly)	Leptophlebiidae (pronggill mayfly)
M	Johnson	MR-22	Perlodidae (Perlodid stonefly)		
MN	Sprague	Sprag	Corydalidae (Dobsonfly)	Gomphidae (club-tailed dragonfly)	