



# Stillwater/ Greenville Creek State Scenic River



Ohio  
Stream Quality Monitoring  
2008 Annual Report



# Stillwater/Greenville State Scenic River 2008 Stream Quality Monitoring Annual Report

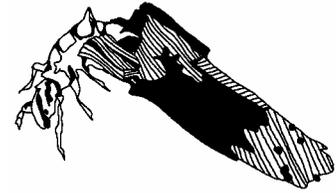
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# Introduction

## Ohio Scenic Rivers Program

With more than 60,000 miles of streams, Ohio is a water-rich state. Many of Ohio's streams support thriving plant and animal communities, including Ohio's state designated scenic rivers. Administered by the Ohio Division of Natural Areas and Preserves, the Ohio Scenic Rivers Program oversees 14 state designated scenic river systems, comprising 800 river miles along 26 stream segments. These streams represent some of the best of Ohio's waterways.



## Stream Quality Monitoring Project

Developed in 1983, the Ohio Stream Quality Monitoring (SQM) Project uses volunteers in aquatic macroinvertebrate monitoring to compile biological and water quality data on the state's scenic rivers. The Ohio SQM Project is an excellent, simple and cost-effective method of assessing a stream's health.

Aquatic macroinvertebrates are organisms that lack a backbone (invertebrate), are large enough in size to view with the naked eye (macro), and spend at least a portion of their lives in the water (aquatic). Macroinvertebrates, such as various aquatic insects (e.g. mayfly, stonefly), are good indicators of stream health. When negative impacts to a stream occur, the result may show a decline or absence of certain macroinvertebrate species. Through consistent monitoring, changes observed in the macroinvertebrate community help the Ohio Scenic Rivers Program in detecting and addressing potential impacts to a stream.

The Ohio Scenic Rivers Program compiles volunteer field assessment information into a statewide database. The database serves as a tool to track short- and long-term changes and trends over time.

## SQM Project Relies on Volunteers

Coordinated by the Division of Natural Areas and Preserves, the Ohio SQM Project provides opportunities for public participation in scenic river protection efforts. Many local, youth and conservation organizations, individuals and families are committed to monitoring more than 150 stations along Ohio's scenic rivers.

SQM volunteers collect macroinvertebrate data from selected monitoring stations, also referred to as monitoring sites or reference stations, at least three times during the monitoring season. Volunteers complete field assessment forms which document taxonomy, tolerance and abundance of collected organisms.

## SQM Annual Report

The information collected by volunteers has become a critical tool for the documenting of the health of Ohio's state scenic, wild and recreational rivers. This report is a compilation of field data collected during 2008 by volunteers and staff. It also represents a year of dedication and commitment shown to Ohio's special waterways by thousands of SQM volunteers.

# Stillwater & Greenville Creek State Scenic River

## Overview

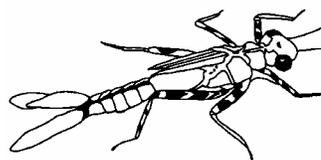
The Stillwater Scenic River, and its tributary Greenville Creek was dedicated Ohio's eighth scenic river in 1975. Additional river miles were added in 1980. Designated stretches include the Stillwater from Riffle Road Bridge in Darke County to its junction with the Great Miami River in Dayton. Greenville Creek is designated from the Ohio/Indiana border to its confluence with the Stillwater. Throughout much of their courses, the Stillwater River and Greenville Creek flow with a gentle grade through the glaciated rich soils of Ohio.

With excellent habitat and good water quality, the Stillwater State Scenic River provides some of Ohio's most prolific smallmouth bass fishing. Pollution-intolerant macroinvertebrates and 38 other fish species such as the northern hog sucker, rainbow darters, and many others comprise the Stillwater's aquatic community. In addition, the river is adorned by numerous species of songbirds and waterfowl, such as the handsome wood duck and a large population of great blue herons.

Like many of Ohio's rivers and streams, history abounds in the Stillwater valley. Shawnee and Miami Indians were living in the area when the first European traders arrived. Following the enactment of the Treaty of Greenville in 1795, the valley became an important area of settlement for early European settlers. This treaty represented the first of several agreements entered into with Ohio's Indian population, paving the way for extensive European settlement in the years to follow.

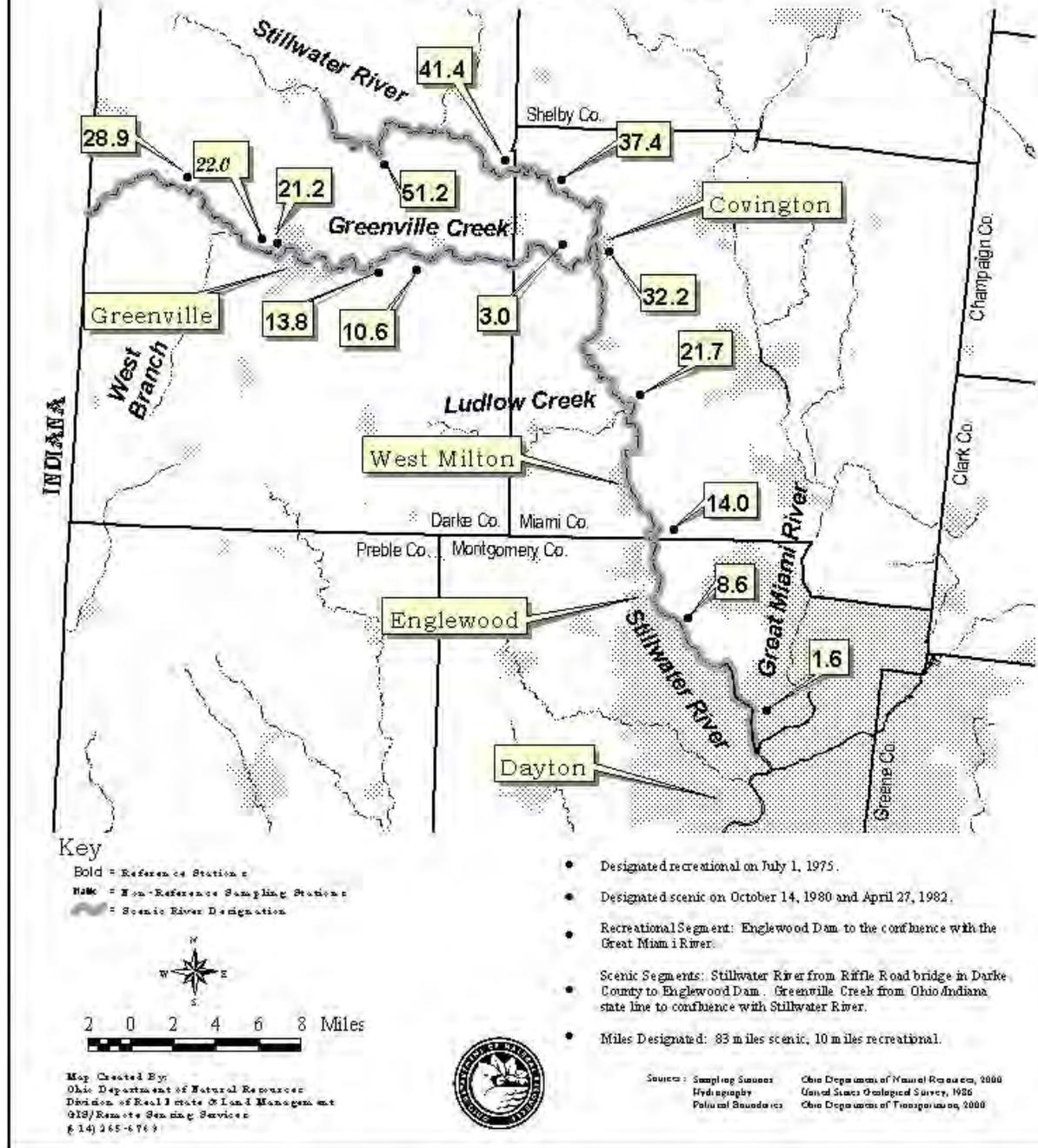
Public access to the Stillwater State Scenic River is available at a number of sites throughout the valley. With continued donations of land, conservation easements, and the tireless efforts of numerous volunteers and organizations, the excellent water quality of the Stillwater State Scenic River will continue.

For more information about public access and facilities along the river, contact the Southwest Ohio Assistant Regional Scenic River Manager at 513-934-0751 or John Wolary at [john.wolary@dnr.state.oh.us](mailto:john.wolary@dnr.state.oh.us), or Division of Natural Areas and Preserves at 614-265-6453. Visit [www.ohiodnr.com/dnap](http://www.ohiodnr.com/dnap) for more information on Ohio's state scenic rivers.



# STILLWATER RIVER & GREENVILLE CREEK

## Stream Quality Monitoring Sampling Stations



# 2008 Stream Quality Monitoring Participants

Whether their contribution was a one-time event or a recurring adventure in stream exploration, the individuals and organizations listed below played a significant role in protecting the Stillwater and Greenville Rivers. Their time and dedication to this river and the Ohio SQM Project is greatly appreciated. Special thanks are also extended to the Stillwater/Greenville Scenic River Advisory Council for their continued support and assistance.

## Stillwater River

### **River Mile 1.6 - DeWeese Park Access**

Lynn Tan & family

### **River Mile 8.6 - Aullwood Garden Access**

Donna Melia  
Rob Clifford  
Margret Hensel

### **River Mile 14.0 - Wheelock Gravel Pit Access**

Linda Raterman

### **River Mile 21.7 - Bruckner Nature Center Access**

Bruckner Nature Center staff  
Mariann Sarvard

### **River Mile 32.3 - Covington Dam Access**

Dan Wirrig  
Cooley Howarth

### **River Mile 37.4 - Stillwater Prairie Access**

Miami County Parks  
John De Boer

### **River Mile 41.4 - Stillwater Beach Access**

Judie Welch

### **River Mile 51.2 - Schroder Road Bridge Access**

Judie Welch

## Greenville Creek

### **River Mile 3.0 – Covington - Gettysburg Bridge Access (Three Bridges)**

Dan Wirrig  
Cooley Howarth

### **River Mile 10.6 - Gettysburg Cemetery Access**

Friends of Darke County Parks

**River Mile 13.8 - Bear's Mill Road Access**

Friends of Darke County Parks

**River Mile 21.25 - Tecumseh Point Access**

Friends of Darke County Parks

**River Mile 22.0 - Greenville Pet Cemetery Access** (non-reference site)

**River Mile 28.9 - Fisher-Dangler Road Access**

Friends of Darke County Parks

The continued success of the Ohio Stream Quality Monitoring Project is dependent upon the commitment and dedication of these (and other) volunteers and participants. If you would like to participate in Ohio's volunteer Stream Quality Monitoring Project, please contact Bob Welch, Southwest Ohio Stream Quality Monitoring Coordinator at 937-548-1596 or John Wolary, the Southwest Ohio Assistant Regional Scenic Rivers Manager at 513-937-0751 or the Division of Natural Areas and Preserves at 614-265-6453.

# Station Descriptions

The Stillwater/Greenville river system has ample public access through a variety of County Park and Scenic River access sites. As a result, most SQM sites on the Stillwater River and Greenville Creek are located on public property and present little difficulty for volunteers to access and monitor regularly. The following are brief descriptions of the selected stream quality monitoring sites along the streams.

## Stillwater River

### **River Miles 1.6 - DeWeese Park Access**

Located near downtown Dayton, access to this sampling station is convenient through the Dayton/Montgomery County Metro Parks. Although located in an urban area, this southern-most reference station of the Stillwater River typically provides fair to good Cumulative Index Values (CIV). There is trash and metal debris lining both banks at this site and foam was observed passing through the site.

Caution must be used when sampling this location due to the fast and sometimes powerful currents in this 50-ft.-wide riffle area. The streambed is comprised of gravel, cobblestones and a handful of boulders, which create further hazards when wading. However, these conditions also provide excellent habitat for such macroinvertebrates as the pollution-intolerant mayfly nymphs and crayfish.

### **River Mile 8.6 - Aullwood Garden Access**

Aullwood Gardens is a public facility, owned and administered by the Audubon Society in the city of Englewood. Located downstream from the Englewood Dam, the 40-ft.-wide sampling area is readily accessible with ample parking nearby. The river bottom is comprised mainly of gravel and cobblestones, and the riffle typically bears a strong current; therefore caution is needed when sampling at this site. CIVs for this station typically score in the excellent range with a wide variety of macroinvertebrates inhabiting the riffle. This area is relatively shallow and creates premium habitat for water penny beetles.

### **River Mile 14.0 - Wheelock Gravel Pit Access**

The 50-ft.-wide riffle area is surrounded by a heavily wooded river corridor, which facilitates this station and a braided channel design. This habitat contributes to the consistently high CIVs. A diversity of pollution-intolerant macroinvertebrates and large number of terrestrial wildlife species may be observed when sampling in this area.

### **River Mile 21.7 - Brukner Nature Center Access**

Brukner Nature Center is north of Ludlow Falls, located off Horseshoe Bend Road. The riverbed is comprised of a mixture of gravel, cobblestones and boulders. This provides exceptional habitat for a number of macroinvertebrates such as dobsonfly (hellgrammite) larvae, crayfish and others. The thick, forested corridor surrounding this site acts to filter incoming pollution, resulting in a diverse array of macroinvertebrates.

### **River Mile 32.33 - Covington Dam Access**

Located in downtown Covington, the sampling area is immediately downstream from the Covington Water Plant and Dam. A new bridge was constructed at this site and the site is now easily accessible. The riverbed is a mixture of cobblestones and large boulders. Habitat is

excellent and a variety of macroinvertebrates are found at this station. Typically, CIVs for this site are very high.

#### **River Mile 37.4 - Stillwater Prairie Access**

Stillwater Prairie is a pristine prairie maintained by Miami County Park District. It is located south of S.R. 185 in Miami County. Access is safe and readily available, with ample parking and well-maintained trails to the river. The monitoring site is found near the far end of the prairie near a very large glacial erratic (boulder). The riffle area is nearly 50 ft. wide and provides a number of different areas to collect macroinvertebrates. CIVs are consistently in the excellent to good range with a variety of species collected including pollution-intolerant caddis flies and the unusual crane fly larvae.

#### **River Mile 41.4 - Stillwater Beach Access**

Located on Versailles Road in Darke County, this private campground provides easy access and ample parking. The sampling station is relatively shallow and narrow with a riverbed comprised mainly of cobblestones and gravel, providing ideal habitat for a wide range of macroinvertebrates. Normal CIVs for this site can be expected within the good range. It should be noted that some trees have been damaged or have fallen into the river causing a change in the river morphology at this site.

#### **River Mile 51.2 - Schroder Road Bridge Access**

As the northern-most sampling station of the Stillwater Scenic River, this site is located in northeast Darke County. The riffle is quite shallow and rather small, at most 20 ft. in width. Comprised mostly of sand and a few cobblestones, this station generally yields CIVs ranging from fair to good. Although a wide variety of macroinvertebrates are collected at this site, persistence is required to collect the pollution-intolerant organisms.

## **Greenville Creek**

#### **River Mile 3.0 - Covington-Gettysburg Road Bridge Access (Three Bridges)**

Located west of the popular Greenville Falls, this is the most downstream sampling station on Greenville Creek. The sampling site is immediately downstream from the bridge. Steep banks can make accessing the river treacherous, so please be careful.

The riffle area is approximately 60 ft. wide with a river bottom comprised of a good mixture of gravel, cobblestones and sand. A large number of stonefly nymphs as well as numerous dragonfly and damselfly nymphs are frequently collected at this station. CIVs are consistently within the excellent range.

#### **River Mile 10.6 - Gettysburg Cemetery Access**

CIVs for this site are typically very high with a wide variety of macroinvertebrates being collected. Swift currents flowing over a river bottom of cobblestones and gravel provide excellent habitat for such pollution-intolerant species as stonefly nymphs and caddisfly larvae.

#### **River Mile 13.8 - Bear's Mill Road Access**

Bear's Mill is a historic mill located on Arcanum-Bears Mill Rd south of State Route 36 in Darke County. The riffle area is fairly shallow, with a river bottom comprised largely of cobblestones and gravel. Depending on the flow within the creek, the CIVs range from good to excellent with a large number of crane fly larvae and riffle beetles.

#### **River Mile 21.25 - Tecumseh Point Access (*new reference site*)**

Located in the heart of the city of Greenville, this new monitoring site is found at the junction of Mud Creek as it flows into Greenville Creek near the Tecumseh Point monument.

The riffle area is shallow, with the river bottom comprised of cobblestones, gravel and sand. This is due to the angle of entry into the Greenville Creek and the deposition of sediments at the mouth. The CIV range is good to excellent giving great habitat for the dobsonfly larvae, crayfish and riffle beetles. There is evidence of some agricultural impacts in the upper reaches of this tributary.

**River Mile 22.0 - Greenville Pet Cemetery Access (*non-reference site*)**

Located on S.R. 571 in Greenville, the sampling station is found on the west end of the Greenville Cemetery. The river bottom is comprised of a good mixture of sand, cobblestones, and boulders and provides excellent habitat for a wide variety of pollution-intolerant macroinvertebrates. Dobsonfly (hellgrammite) larvae and riffle beetles are commonly collected at this site.

**River Mile 28.9 - Fisher-Dangler Road Access**

The Fisher-Dangler Road Access is the upper most sampling station on Greenville Creek. The riffle area is found on the west side of the bridge. The riverbed is comprised of a mixture of sand and cobblestones that yields consistently high CIVs. The creek is somewhat narrow and shallow and sampling at this site is relatively easy. A large number of macroinvertebrate species is typically collected at this site.

## Sampling Results and General Trends

Mid Western Ohio experienced above average rainfall through the months of June and early July, according to the National Oceanic and Atmospheric Administration (NOAA). The above average rainfall led to an above normal flow during the spring and early summer on both river systems. The trend reversed itself in late July, August and September with little or no rainfall, according to NOAA, for the rest of 2008 monitoring season. These differing trends of above and below normal flows during the monitoring season led to counts below the normal average for some of the Cumulative Index Values (CIV) while some counts remained excellent.

CIVs on three Stillwater River stations increased during the 2008 season while four decreased. The individuals of Group 1 taxa on all sites remained the same, while there was a slight decrease in the individuals of both the Group 2 and Group 3 taxa. The 2008 season's 21.2 CIV averages on the Stillwater River are down compared to 2007 season's averages of 24.4 CIV. The 2008 average corresponds to the good range, which is a significant change from the previous year's excellent score. Although the score dropped a category, the results still fall with the EPA guidelines for Warm Water Habitat. Scenic River staff will continue to monitor these areas closely during 2009. The Stillwater River average taxonomic diversity per assessment was nine macroinvertebrate orders (e.g. stonefly, damselfly, mayfly, etc.).

Sampling results on Greenville Creek showed a slight decrease in CIVs at four stations, with an increase in CIVs only at one station. The 2008 season's 23.4 CIV averages on Greenville Creek are down compared to the 2007 season's averages of 26.4 CIV. Although the score dropped three points the average still falls within the excellent range. The Greenville Creek average taxonomic diversity per assessment was 9 macroinvertebrate orders (e.g. stonefly, damselfly, mayfly, etc.).

*Volunteer and staff data are used for the Ohio SQM Project as a water quality-screening method. The data helps in detecting significant changes in stream quality based on CIV data from sites that have been monitored for many years over time by staff and trained volunteers. In the event that significant CIV declines are noticed for a particular site, potential problems that may be causing stream degradation can be further investigated and addressed.*

The Southwest Ohio Scenic Rivers staff would like to thank our dedicated volunteer monitors. It is only through their efforts that it was possible to complete the SQM samples on the Stillwater River and Greenville Creek. Additional volunteers are needed to assist in monitoring reference stations on the Stillwater River and Greenville Creek in the upcoming year. Interested persons should contact Bob Welch, Southwest Ohio SQM Coordinator at 937-548-1596 to request the necessary training and monitoring equipment.

# Total Suspended Solids (TSS)

In 1999, the Scenic River Program added Total Suspended Solids (TSS) monitoring to the Stream Quality Monitoring (SQM) Project. The purpose of this addition is to estimate the amount of soil sediments impacting a stream by estimating the turbidity of the water. These sediments are attributed to problems originating in the headwater streams. The equipment is calibrated to predict TSS at 90% accuracy. The measurements are accurate enough to determine the changes in sediment rates in a stream at a given location and time.

Variables such as amount of precipitation, slope and gradient of the river system, soil type, time of year data is collected, amount of development, amount of riparian corridor, velocity of the river flow, and the amount of waste water effluent have an effect on the TSS value. Precipitation amount is important because of the increased potential for sediments to be carried into the river during a rain event.

The TSS value may appear higher than normal if precipitation amounts are not taken into account. Since large rain events usually happen in the spring and early summer, the time of year the samples are taken could affect the TSS score. The gradient of the stream is important as well. Sediments do not settle out as easily in high gradient streams because the velocity of the water washes it downstream. In low gradient streams, sediment has a chance to settle out, resulting in a lower TSS value. Soil types impact TSS values because some soil types erode faster than others. A better understanding of the types of soils within the watershed may give way to a better understanding of the baseline TSS values for a stream.

Development in an area can cause changes in the TSS score. Areas cleared for new buildings are often not covered, causing an acute rise in the amount of suspended solids in nearby streams. Impermeable surfaces can also cause chronic elevation of TSS values because there is no buffer to absorb or trap runoff. Wastewater treatment plant effluent would only affect TSS scores in low flow situations, and only if the plant employs only primary or secondary treatment.

The actual process of sampling is simple. Using a clear Lucite sediment stick developed by the Lake Soil and Water Conservation District, a water sample is collected from the stream. Keeping the sample materials suspended, water is then poured out of the tube until the 0.4-inch target dot is visible on the tube bottom. A reading of the water column height is taken from the markings on the stick to the nearest ¼ inch. A conversion table is then used to convert the sediment stick reading to a total suspended solids measurement in the form of an estimate of the weight of solids suspended in the water column (mg/L).

The TSS measurement can further be used to estimate water quality through the use of the following scale:

- TSS <10 mg/L = excellent water quality
- TSS 10-28 mg/L = normal water quality
- TSS 29-133 mg/L = impaired stream
- TSS >133 mg/L = severely impacted stream

**2008 TSS Results:** Sediment stick samples for monitoring of Total Suspended Solids (TSS) in the Stillwater River ranged from < 6.2 mg/L to 54 mg/L with a median of 10 mg/L that corresponds to the normal water quality. The data set for the Greenville Creek ranged from <6.2 mg/L to 11mg/L with a median of <6.2 mg/L which corresponds to excellent water quality.

# Comparisons of Collected Stream Quality Monitoring Data

Monitoring of the same reference station is performed a minimum of three times per year consistently year after year. An assessment of the diversity and tolerance levels of taxonomy collected generates the Cumulative Index Value (CIV) for the site on a given date. Field assessment results are used as basic indicators of long-term changes in a stream's macroinvertebrate community and help Scenic River staff identify pronounced stream quality problems.

Table 1 identifies the 20 macroinvertebrates assessed and their general tolerance to pollutants. Pollution-intolerant organisms, such as those listed in Group I, require unpolluted, high quality water in order to survive. Pollution-tolerant organisms, such as those listed in Group III, are extremely tolerant of deteriorated water conditions.

**Table 1. Macroinvertebrate Pollution Tolerance**

<b>Group I Taxa Pollution Intolerant</b>	<b>Group II Taxa Moderately Tolerant</b>	<b>Group III Taxa Pollution Tolerant</b>
Water Penny Beetle Larvae (WP) Mayfly Nymphs (MF) Stonefly Nymphs (ST) Dobsonfly Larvae (DO) Caddisfly Larvae (CD) Riffle Beetle Adult (RI) Other Snails (OS)	Damselfly Nymphs (DA) Dragonfly Nymphs (DR) Crane Fly Larvae (CR) Beetle Larvae (BL) Crayfish (CF) Scuds (SC) Clams (CL) Aquatic Sowbugs (SW)	Black Fly Larvae (BF) Aquatic Worms (AW) Midge Larvae (MI) Pouch Snails (PS) Leeches (LE)

Tables 2.1 and 2.2 represents the mean Cumulative Index Values (CIV) for each Stream Quality Monitoring reference station sampled on the river during 2008. In addition, the table uses symbols (◆) to indicate those macroinvertebrates found to be present at least once during the year at the respective reference station. Each macroinvertebrate is identified by a two-letter code given in Table 1. CIV values of 23 or greater indicate Excellent stream quality; CIV values of 17-22 indicate Good stream quality; CIV values ranging from 11-16 suggest Fair stream quality; and CIV of 10 or less reflect Poor stream quality. Situated beside the CIV are the symbols + (improved), = (equal), or – (lower) indicating the relationship to the previous years CIV.

For the full range of CIV attained at all sites monitored during the year including non-reference stations, please see the *Appendix*.

**Table 2.1 Stillwater River 2008 Mean CIV by Reference Station**

STATION	W P	M F	S T	D O	C D	R I	O S	D A	D R	C R	B L	C F	S C	S L	S W	B F	A W	M I	P S	L E	CIV
1.6	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆		◆		◆	◆	◆		◆	23-
8.6	◆	◆	◆		◆	◆	◆				◆	◆						◆	◆	◆	19-
14		◆	◆		◆	◆	◆	◆	◆	◆	◆	◆				◆	◆	◆			21+
21.7																					0-
32.2	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆			◆		◆	◆		◆	23+
37.4	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		◆	◆		◆	◆		◆	30+
41.4	◆	◆			◆	◆	◆	◆	◆	◆	◆	◆					◆	◆		◆	22-
51.2		◆			◆	◆			◆			◆					◆	◆			10-

**Table 2.2 Greenville Creek 2008 Mean CIV by Reference Station**

STATION	W P	M F	S T	D O	C D	R I	O S	D A	D R	C R	B L	C F	S C	S L	S W	B F	A W	M I	P S	L E	CIV
3.0	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆			◆		◆				22+
10.6	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		◆	◆		◆	◆			28-
13.8	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆			◆		◆	◆			24-
21.25	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆			◆		◆	◆			21-
28.9	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆						◆			22-

Figure 1.1 and 2.1 represents the maximum and minimum CIV range recorded during the year for each reference station. Figure 1.2 and 2.2 represents mean CIV at each reference station over many years.

**Figure 1.1 Stillwater River CIV Max and Min Ranges 2008**

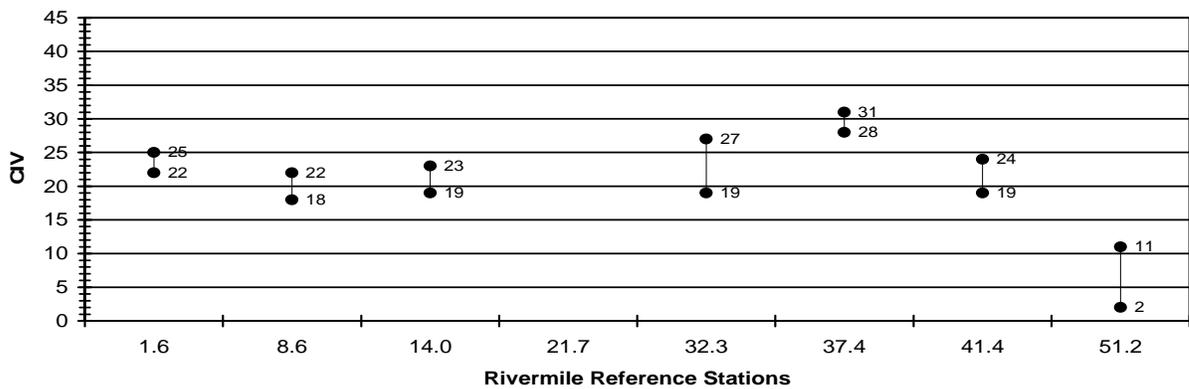
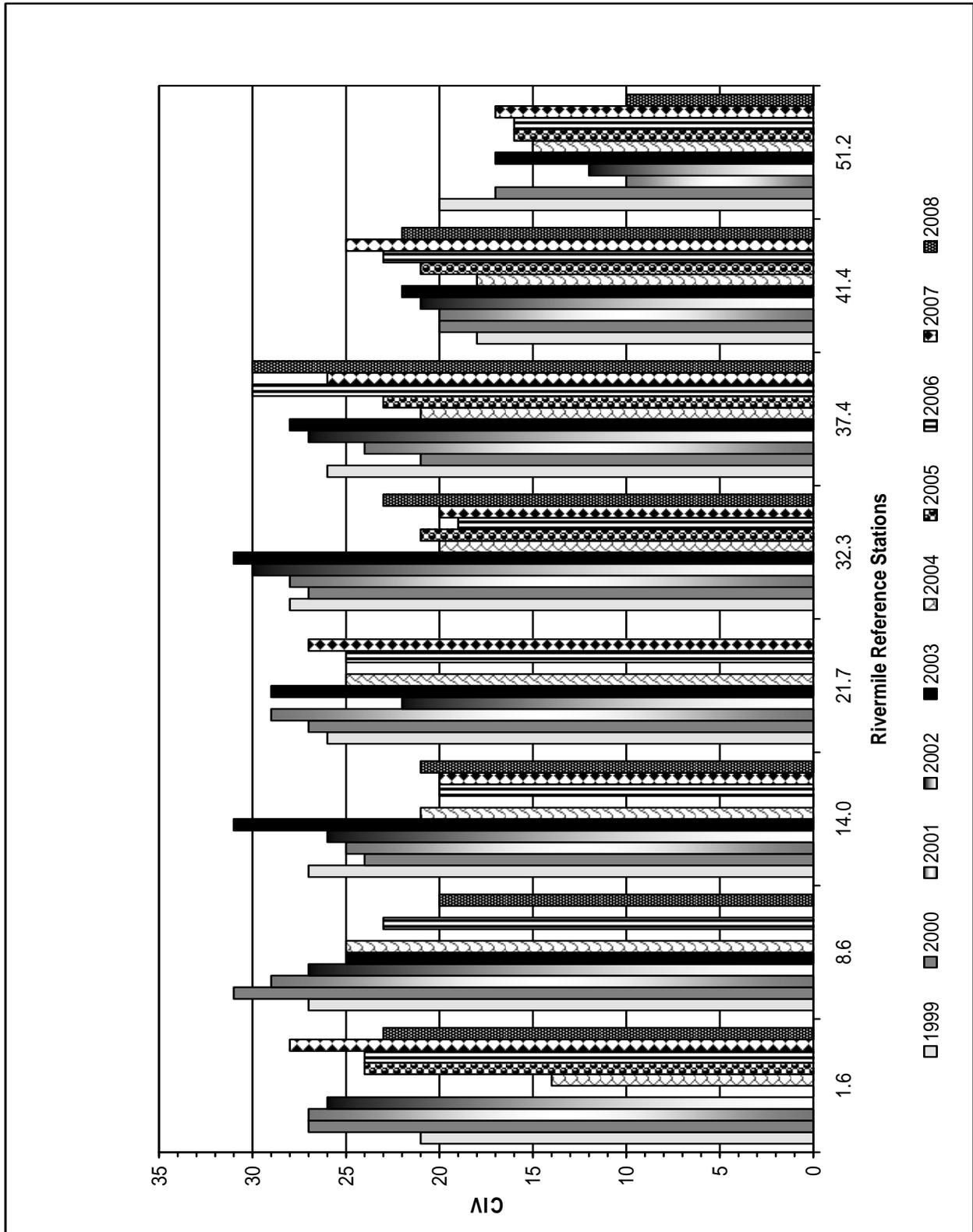
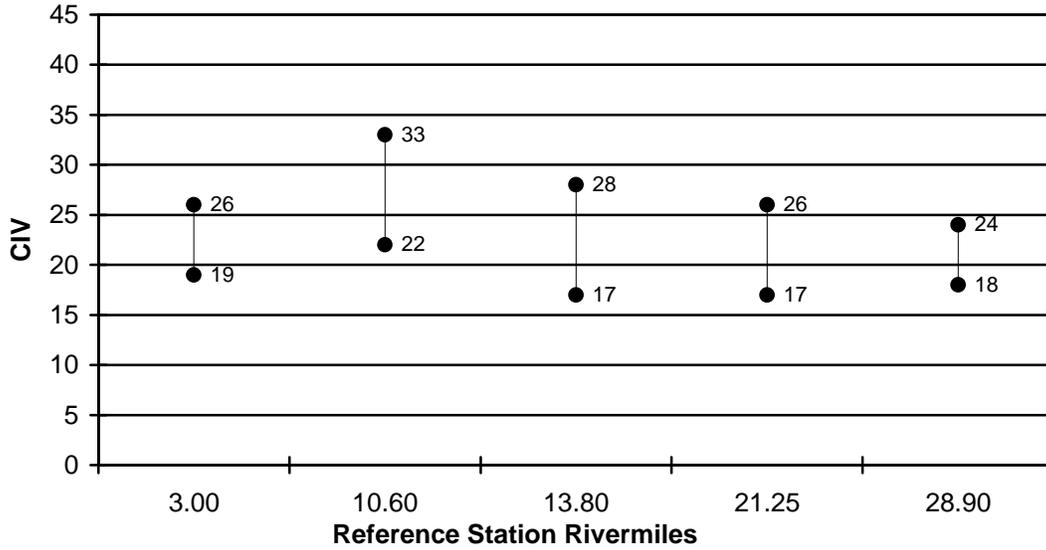


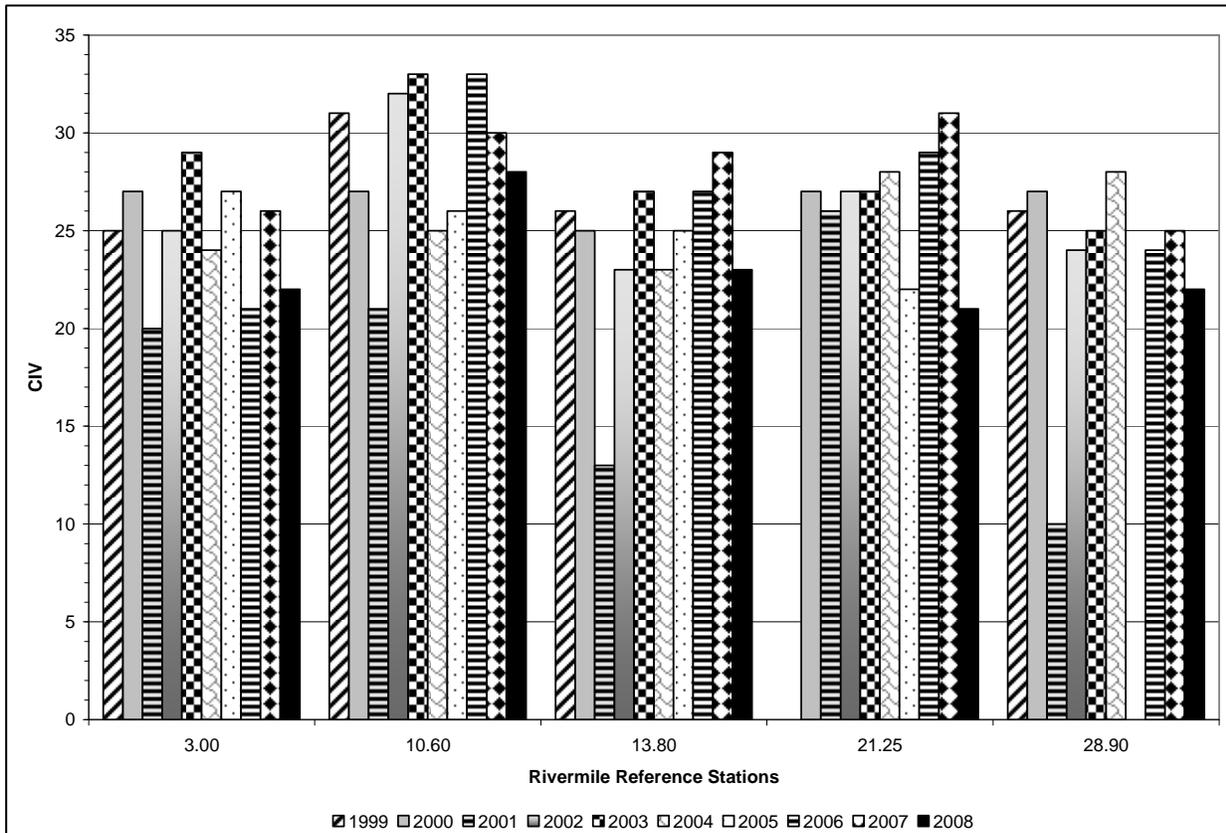
Figure 1.2 Stillwater River Mean CIV 1999-2008



**Figure 2.1 Greenville Creek CIV Max and Min Ranges 2008**



**Figure 2.2 Greenville Creek Mean CIV 1999-2008**



# Qualitative Habitat Evaluation Index (QHEI)

The Qualitative Habitat Evaluation Index (QHEI) is a system developed and employed by the Ohio Environmental Protection Agency (OEPA) to measure physical habitat conditions in and around rivers and streams in Ohio. During 1998, SQM staff tested a modified version of the QHEI, referred to as *Citizens QHEI*, to gather baseline measurements at reference stations on several of Ohio's scenic rivers. It is anticipated that such measurements will become yet another annual tool that will be used to monitor habitat and water quality conditions on all Ohio scenic rivers.

Habitat conditions are re-evaluated every five years. Once training has been received, Southwest Ohio Scenic Rivers staff will incorporate QHEI evaluations for both the Stillwater River and Greenville Creek. In addition, SQM volunteer monitors are encouraged to begin Citizen's QHEI on Southwest Ohio scenic rivers. Until then, results from 1999 QHEI are included below.

When attempting to interpret this data, it is important to recognize that OEPA generally concludes that any site receiving a QHEI value greater than 60 meets current warmwater habitat (WWH) standards. Meeting WWH standards suggests that such locations should be adequate for supporting reproducing communities of fish and macroinvertebrate life. Sites attaining QHEI scores of greater than 80 are generally believed to contain exceptional habitat conditions for warmwater communities.

The following table has been prepared to assist with determining the relationship between habitat conditions (measured by the QHEI) and macroinvertebrate community performance (measured by the Cumulative Index Value), at each of the reference stations on selected rivers.

**Table 3 Stillwater River 1999 QHEI and SQM Assessment Data**

Reference Station	QHEI	Attainment Status	1999 SQM Average CIV	SQM Assessment
RM 1.6	63	FULL	21	GOOD
RM 8.6	83	FULL	27	EXCELLENT
RM 14.0	75	FULL	27	EXCELLENT
RM 21.7	65	FULL	26	EXCELLENT
RM 32.3	52	NON	28	EXCELLENT
RM 37.4	91.5	FULL	26	EXCELLENT
RM 41.4	72	FULL	18	GOOD
RM 51.2	73	FULL	20	GOOD

**Table 4 Greenville Creek 1999 QHEI and SQM Assessment Data**

Reference Station	QHEI	Attainment Status	1999 SQM Average CIV	SQM Assessment
RM 3.0	65	FULL	25	EXCELLENT
RM 10.6	75	FULL	31	EXCELLENT
RM 13.8	77	FULL	26	EXCELLENT
RM 22.0	54.5	NON	27	EXCELLENT
RM 28.9	64	FULL	26	EXCELLENT

# Appendix

## Stream Quality Monitoring Data by Monitoring Station

2008 CIVs by Monitoring Station STILLWATER RIVER																						
RM	DATE	W P	M F	S T	D O	C D	R I	O S	D A	D R	C R	B L	C F	S C	C L	S W	B F	A W	M I	P S	L E	CIV
1.60	5/22/2008	A			A	B	A	B			A				B		A	A	A		A	22.00
1.60	7/11/2008	A	A			B	A	B		A		A		A	A							23.00
1.60	9/29/2008	A			A		A	A	B	A	A		A		B		A		A		A	25.00
8.60	7/11/2008	A	A			A		B	A			A	A							A		19.00
8.60	8/10/2008	A	A	A		C	B	B							A			B	B			22.00
8.60	10/12/2008		A	A		C		C							A			A				18.00
14.00	7/10/2008		A			B	A	A	A			A	A						A			19.00
14.00	8/21/2008		B	B		C	B	A	A	A	B							C	A			23.00
14.00	10/7/2008		A	A		C	C		A			A			A		A	A	A			21.00
32.30	5/29/2008	A	B	B		A	A	A	A		A		B			A		A				27.00
32.30	8/17/2008	A	B	A		A		A			A		B					A	A		A	22.00
32.30	10/31/2008	A	B			B	A		A			A	A					A				19.00
37.40																						
37.40	6/19/2008	A	B	A		B	A	A	A	A	A	A	B			A					A	31.00
37.40	9/16/2008	A	A			B	A	A	A		A		A		A	A		A	A		A	28.00
41.40	7/10/2008		A			A	A		A	A	A	A	A		A			A	A		A	24.00
41.40	8/17/2008	A	A			A		A	A				A		A			A				19.00
41.40	9/15/2008	A	A			A		A	A			A	A		A			A	A			22.00
51.20	7/10/2008												A									2.00
51.20	8/17/2008		A			A				A			A					A				11.00
51.20	9/15/2008					A	A		A				A					A	A			17.00

2008 CIVs by Monitoring Station GREENVILLE CREEK																						
RM	DATE	W P	M F	S T	D O	C D	R I	O S	D A	D R	C R	B L	C F	S C	C L	S W	B F	A W	M I	P S	L E	CIV
3.00	5/29/2008	B	B	A		B		B	A		A	A	B			A		A				26.00
3.00	8/17/2008	B	B	A		A		A	A				A									19.00
3.00	10/31/2008	B	B	A		A	A				A		A					A				20.00
10.60	5/24/2008	B	B	B		A	A	B	A	A	A	B	B		B	C		A				33.00
10.60	8/10/2008	B	B			C		A				A	B		A	A		A	A			22.00
10.60	10/18/2008	A	B	A		B	A	A	A		A		A	A		A						28.00
13.80	5/24/2008	A	A	A		A	A	B	A				A		A	A			A			28.00
13.80	8/10/2008	A	A			A	A					A	A						A			17.00
13.80	10/18/2008	A	B	A		B		B		A			A	A	A				A			24.00
21.25	5/24/2008	A	A	A				A	A				B		A	B			A			21.00

**2008 CIVs by Monitoring Station  
GREENVILLE CREEK**

RM	DATE	W P	M F	S T	D O	C D	R I	O S	D A	D R	C R	B L	C F	S C	C L	S W	B F	A W	M I	P S	L E	CIV
21.25	8/10/2008	A	A			A						A	A		A			A				17.00
21.25	10/18/2008	A	B			B	A	A	A		A	A	A		A				A			26.00
28.90	5/24/2008	B	B	B			A	B	A				B		B	A						23.00
28.90	8/10/2008	A	A					B	A	A			A		A				A			18.00
28.90	10/18/2008	B	B	A				B	A		A		A		A				A			24.00