Stream Quality Monitoring 2015 Annual Report Stillwater River & Greenville Creek State Scenic & Recreational River

Contents

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 Watercraft, the Ohio Scenic River 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 who assist 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 macroinvertebrate organisms lack a backbone (invertebrate), are large enough 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 Watercraft's Scenic River Program, 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 that document taxonomy, tolerance, and abundance of collected organisms.

SQM Annual Report

The information collected by volunteers has become a critical tool for documenting the health of Ohio's state scenic, wild and recreational rivers. This report is a compilation of field data collected during 2015 by volunteers and staff. It also represents a year of dedication and commitment shown to Ohio's special waterways by thousands of SQM volunteers.

Overview

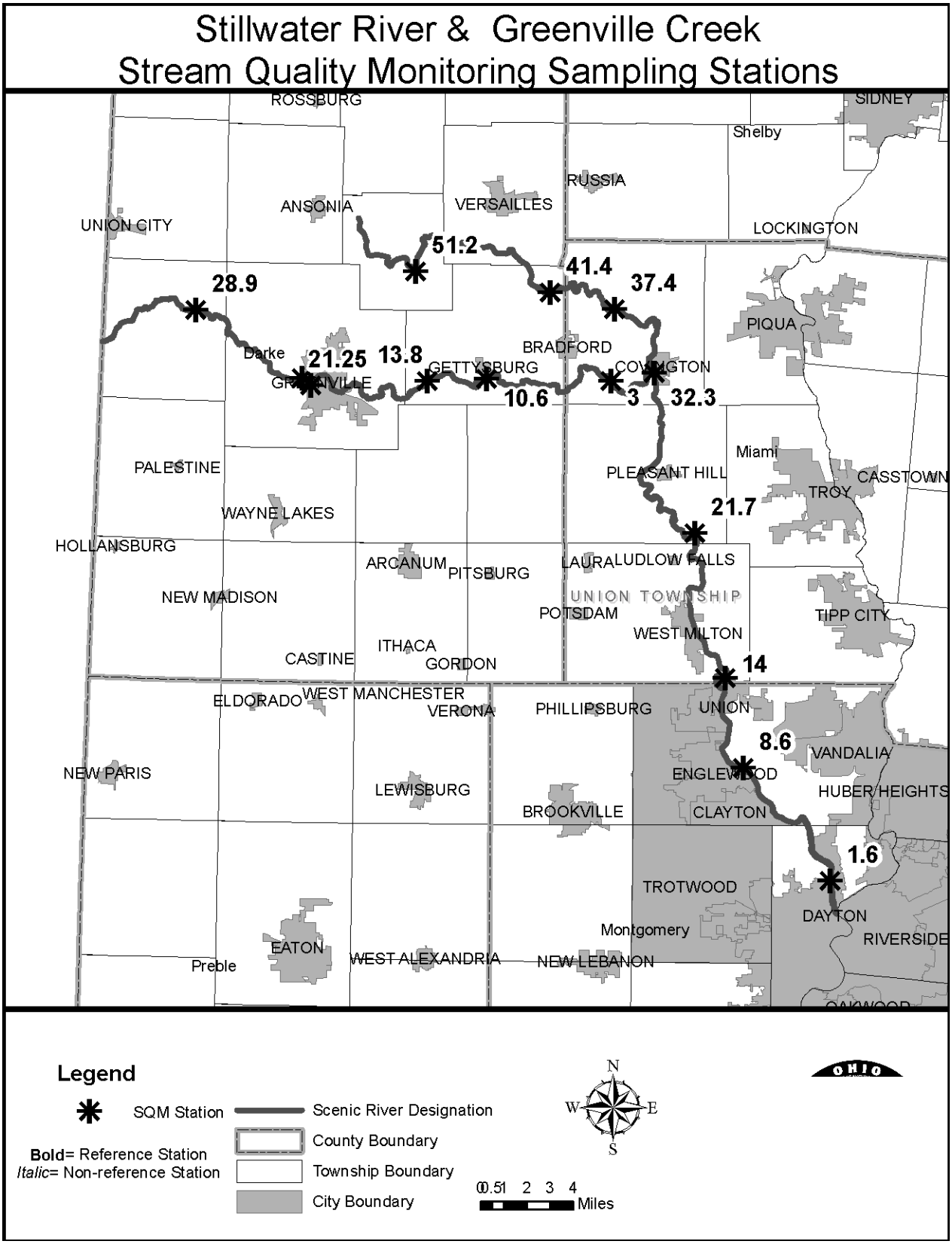
The Stillwater State Scenic River and its tributary, Greenville Creek, were dedicated as Ohio's eighth scenic river system in 1975. Additional river miles were added in 1980. Designated stretches include the Stillwater River from Riffle Road Bridge in Darke County to its junction with the Great Miami River in Dayton. Greenville Creek is designated from the Ohio/Indiana border to its confluence with the Stillwater River. Throughout much of their length, 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 70 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 heron.

Like many of Ohio's rivers and streams, history abounds in the Stillwater River 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.

Numerous public facilities along the Stillwater River and Greenville Creek provide easy and safe ways to enjoy these magnificent rivers. For more information, please contact the Southwest Ohio Scenic Rivers Manager at 513-934-0751 or visit *watercraft.ohiodnr.gov*.


Stillwater River & Greenville Creek
Stream Quality Monitoring Sampling Stations
ROSSBURG
SIDNEY
Shelby
RUSSIA
ANSONIA
VERSAILLES
UNION CITY
LOCKINGTON
51.2
41.4
37.4
28.9
PIQUA
Darke
21.25
13.8
BRADFORD
GETTYSBURG
COVINGTON
10.6
3
32.3
Miami
PALESTINE
PLEASANT HILL
CASSTOWN
TROY
21.7
WAYNE LAKES
HOLLANSBURG
ARCANUM
PITSBURG
LAURA
LUDLOW FALLS
NEW MADISON
UNION TOWNSHIP
POTSDAM
TIPP CITY
WEST MILTON
ITHACA
CASTINE
GORDON
14
ELDORADO
WEST MANCHESTER
VERONA
PHILLIPSBURG
UNION
8.6
VANDALIA
NEW PARIS
ENGLEWOOD
LEWISBURG
HUBER HEIGHTS
BROOKVILLE
CLAYTON
1.6
TROTWOOD
DAYTON
Montgomery
RIVERSIDE
EATON
Preble
WEST ALEXANDRIA
NEW LEBANON
OAKWOOD
Legend
SQM Station
Scenic River Designation
County Boundary
Township Boundary
City Boundary
Bold= Reference Station
Italic= Non-reference Station
N
W
E
S
OHIO
0 0.5 1 2 3 4
Miles

2015 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 River and the Greenville Creek. Their time and dedication to these rivers 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
Doug Horvath: Five Rivers Metro Parks

River Mile 8.6 - Aullwood Garden Access
Erica, Jeff, Josh and Kevin Adler
Emily Hammant and Hannah Dietering

River Mile 14.0 - Wheelock Gravel Pit Access
Miami County Soil and Water Conservation District: Linda Raterman

River Mile 21.7 - Bruckner Nature Center Access
Brukner Nature Center: Molly Simonis and Deb Oexmann

River Mile 32.3 - Covington Dam Access
Merle and Eric Carr
Anna Kamnyev

River Mile 37.4 - Stillwater Prairie Access
Merle and Eric Carr

River Mile 41.4 - Stillwater Beach Access
Megan Miller

River Mile 51.2 - Schroder Road Bridge Access
Tamma and John Cassidy

Greenville Creek

River Mile 3.0 – Covington - Gettysburg Bridge Access (Three Bridges)
Eva Maloney

River Mile 10.6 - Gettysburg Cemetery Access
Dave and Ann Schaller

River Mile 13.8 - Bear's Mill Road Access
Roy Call and Dan Barke
Anna and Vladimir Kamnyev

River Mile 21.25 - Tecumseh Point Access
Bobbi and Doug Loman

River Mile 22.0 - Greenville Pet Cemetery Access (*non-reference station*)
Volunteers Needed

River Mile 28.9 - Fisher-Dangler Road Access
Bobbi and Doug Loman

The continued success of the Ohio Stream Quality Monitoring Project is dependent upon the commitment and dedication of these (and other) volunteers and participants. The continued efforts of the The Miami County Park District, Brukner Nature Center, The Miami County Soil and Water Conservation District, The Historic Bears Mill, Five Rivers MetroParks, Aullwood Audubon Center and many other valuable constituents in conjunction with the Ohio Department of Natural Resources has been crucial in the preservation of this delicate ecosystem. If you would like to participate in Ohio's Volunteer Stream Quality Monitoring Project, please contact the Southwest Ohio Stream Quality Monitoring Coordinator at 937-481-4510.

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, this sampling station has convenient access through the Five Rivers 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 (CIVs). Trash and metal debris line both banks at this site.

Caution must be used when sampling this location due to the fast and sometimes powerful currents. 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 Englewood Audubon Society. Located downstream from the Englewood Dam, the 40-foot-wide sampling area is readily accessible with ample parking nearby. The river bottom is comprised mainly of gravel and cobblestones; the riffle typically bears a strong current, therefore, caution is needed when sampling at this site. This area is relatively shallow and creates premium habitat for water penny beetles.

River Mile 14.0 - Wheelock Gravel Pit Access
This riffle is surrounded by a heavily wooded river corridor, which facilitates the braided channel design. A diversity of pollution-intolerant macroinvertebrates including the Dobsonfly Larva (Helgramite) can be found here. In addition, a 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 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.

River Mile 37.4 - Stillwater Prairie Access
Stillwater Prairie is a pristine prairie maintained by Miami County Park District. It is located south of State Route 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-feet-wide and provides a

number of different areas to collect macroinvertebrates. A variety of species are typically collected here, including pollution-intolerant caddis fly and crane fly larvae.

River Mile 41.4 - Stillwater Beach Access
Located on Versailles Southeastern 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.

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 feet in width and is comprised mostly of sand and a few cobblestones. 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 upstream from the bridge. Steep banks can make accessing the river treacherous and caution must be used.

The riffle area is approximately 60-feet-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.

River Mile 10.6 - Gettysburg Cemetery Access
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; a wide variety of macroinvertebrates are routinely sampled here.

River Mile 13.8 - Bear's Mill Road Access
Bear's Mill is a historic mill located on Arcanum-Bears Mill Road south of State Route 36 in Darke County. The riffle area is fairly shallow, with a river bottom comprised largely of cobblestones and gravel.

River Mile 21.25 - Tecumseh Point Access
Located in the heart of the City of Greenville, this 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 substrate is caused by the angle of entry into Greenville Creek and the deposition of sediments at the mouth. There is evidence of some possible agricultural impacts in the upper reaches of this tributary.

River Mile 22.0 - Greenville Pet Cemetery Access (*non-reference station*)
Located on State Route 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. 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

The 2015 field-monitoring season was one hampered by excessive rainfall especially during the spring and early summer months. According to the National Oceanic and Atmospheric Administration (NOAA) April saw more than 5 inches of rain compared to the normal rainfall amount of 3.89 inches for the month. In May, precipitation levels fell below normal with the area receiving 1.63 inches of rain compared to the average of 4.93 inches. During June and July precipitation levels were again above normal with June receiving a staggering 7.3 inches in southwest Ohio which was more than 3 inches above normal. Many volunteers encountered high water conditions and had to use caution while accessing certain reference stations on the Stillwater River and Greenville Creek during the spring and summer. During the remainder of the sampling season precipitation amounts stayed closer to normal but SQM volunteers still had to sample into late fall due to difficulty accessing their reference sites during these rainy periods. The SQM Project requires a minimum of 3 readings to calculate a Cumulative Index Value (CIV), with a minimum of 30 days between each sample. Due to the efforts of our dedicated volunteers all 13 reference stations on The Stillwater River and Greenville Creek were sampled during the 2015 season and we were able to establish an average CIV for each site. We were pleased to add 29 new volunteers during the summer of 2015.

Scenic River volunteers conducted a total of 28 assessments on the 8 monitoring stations on the Stillwater River during the 2015 monitoring season. These reference sites recorded an average CIV of 23 corresponding to the excellent range for stream quality. This is an increase of 1.5 compared to 2014 data. 5 reference sites on the Stillwater River showed an increase in the average CIV while 3 sites showed a decline. The Stillwater River's average taxonomic diversity per assessment was 10.6 macroinvertebrate orders (e.g. Stonefly, Damselfly, Mayfly, etc.) which is an increase of .85 macroinvertebrate orders from the previous year.

Scenic River volunteers conducted a total of 15 assessments on the 5 monitoring sites on Greenville Creek during the 2015 monitoring season. These reference sites recorded an average CIV of 26.4 corresponding to the excellent range for stream quality. This is an increase of 2.6 from the previous year's data. 3 Reference sites on Greenville Creek show an increase in the average CIV while 2 showed a decline. Greenville Creek's average taxonomic diversity per assessment was 11.4 macroinvertebrate orders (e.g. Stonefly, Damselfly, Mayfly etc.). This is an increase of 1.1 macroinvertebrate orders from the previous year's data. For the first time in several years all 5 reference sites on Greenville Creek scored in the excellent range for water quality.

Data collected by SQM Project volunteers and ODNR staff is used as a water quality-screening method. The data helps to detect significant changes in stream quality based on CIV data from sites monitored for many years. If there is a significant decline in the average CIV, potential problems that may be causing stream degradation can be further investigated and addressed.

The staff of the Ohio Scenic Rivers Program appreciates the assistance we received from our dedicated volunteer monitors. Working together we have produced significant results but additional volunteers are needed to continue monitoring all reference sites to ensure accurate and thorough data. For more information, please contact the Southwest Ohio Scenic River SQM Coordinator at 937-481-4510.

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 TSS 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 water quality
TSS >133 mg/L = severely impacted water quality

2015 TSS Results:

Monitoring of TSS in the Stillwater River reflected a range of 6.2 mg/L to 38.7 mg/L for the 29 samples taken. The median TSS value for the Stillwater River for 2015 was 8.9 mg/L falling within the range for excellent water quality.

Monitoring of TSS in Greenville Creek reflected a range of 6.2 mg/L to 33.7 mg/L for the 15 samples taken. The median TSS value for Greenville Creek for 2015 was 8.6 mg/L falling within the excellent range for water quality.

Comparisons of Collected Stream Quality Monitoring Data

Frequent 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

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

Tables 2.1 and 2.2 represent the mean Cumulative Index Values (CIVs) for each Stream Quality Monitoring reference station sampled on the river during 2015. 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. CIVs of 23 or greater indicate *Excellent* stream quality; CIVs of 17-22 indicate *Good* stream quality; CIVs ranging from 11-16 suggest *Fair* stream quality; and CIVs of 10 or less reflect *Poor* stream quality. Situated beside the CIV are the symbols + (improved), = (equal), or – (declined) 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 2015 Mean CIVs by Reference Station

STATION	WP	MF	ST	DO	CD	RI	OS	DA	DR	CR	BL	CF	SC	CL	SW	BF	AW	MI	PS	LE	CIV
1.6	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		◆	◆		◆	◆		◆	**27+**
8.6	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	**25-**
14	◆	◆	◆	◆	◆	◆		◆		◆	◆	◆		◆		◆	◆	◆		◆	**21-**
21.7	◆	◆		◆	◆	◆	◆			◆	◆			◆	◆	◆	◆	◆		◆	**23+**
32.2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		**25+**
37.4	◆	◆	◆			◆	◆		◆	◆		◆	◆			◆	◆		◆	◆	**20-**
41.4	◆	◆			◆	◆	◆	◆		◆	◆	◆		◆		◆	◆	◆			**24+**
51.2	◆	◆		◆	◆		◆	◆		◆	◆	◆		◆		◆	◆	◆	◆	◆	**19+**

*Not enough samples were taken to calculate an average at this station.

Table 2.2 Greenville Creek 2015 Mean CIVs by Reference Station

STATION	WP	MF	ST	D0	CD	RI	OS	DA	DR	CR	BL	CF	SC	CL	SW	BF	AW	MI	PS	LE	CIV
3.0	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			**27-**
10.6	◆	◆	◆		◆	◆	◆	◆	◆			◆		◆			◆	◆	◆	◆	**24+**
13.8	◆	◆	◆		◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	**29+**
21.25	◆	◆			◆	◆	◆		◆	◆	◆	◆		◆	◆	◆	◆	◆			**27+**
28.9	◆	◆			◆		◆	◆		◆		◆					◆				**25+**

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

Figure 1.1 Stillwater River 2015 CIV Maximum and Minimum Ranges

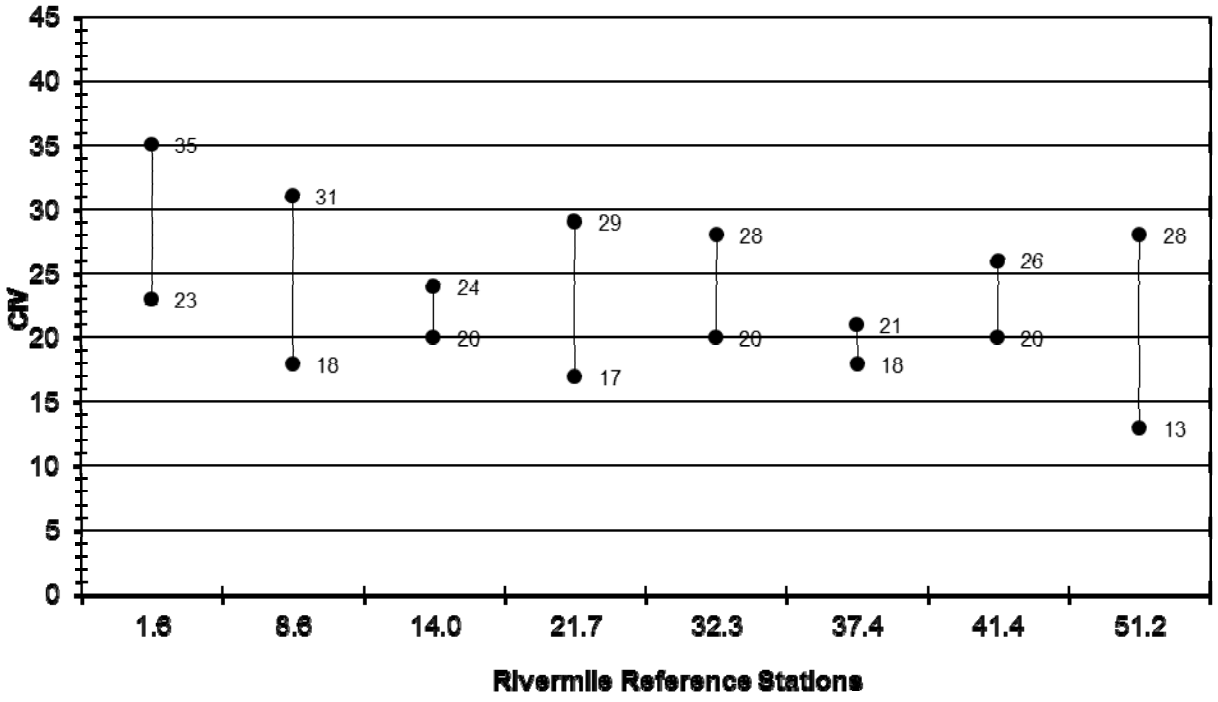


Figure 1.2 Greenville Creek 2015 CIV Maximum and Minimum Ranges

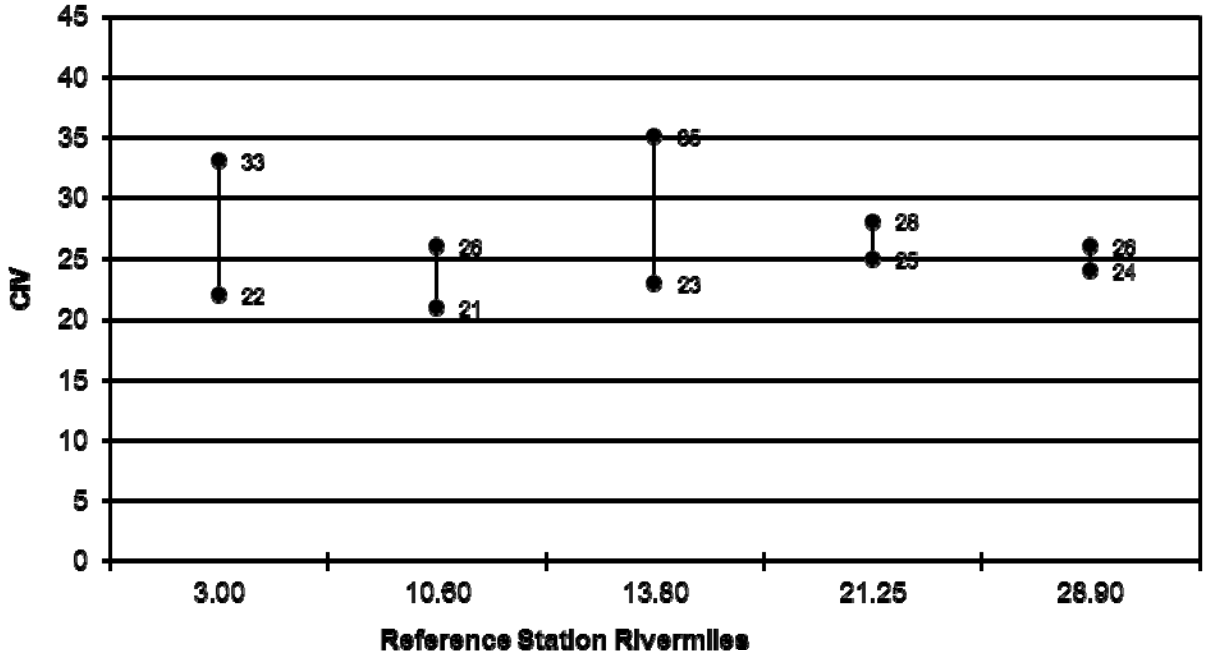


Figure 2.1: Stillwater River 2006-2015 Mean CIV's by Reference Station

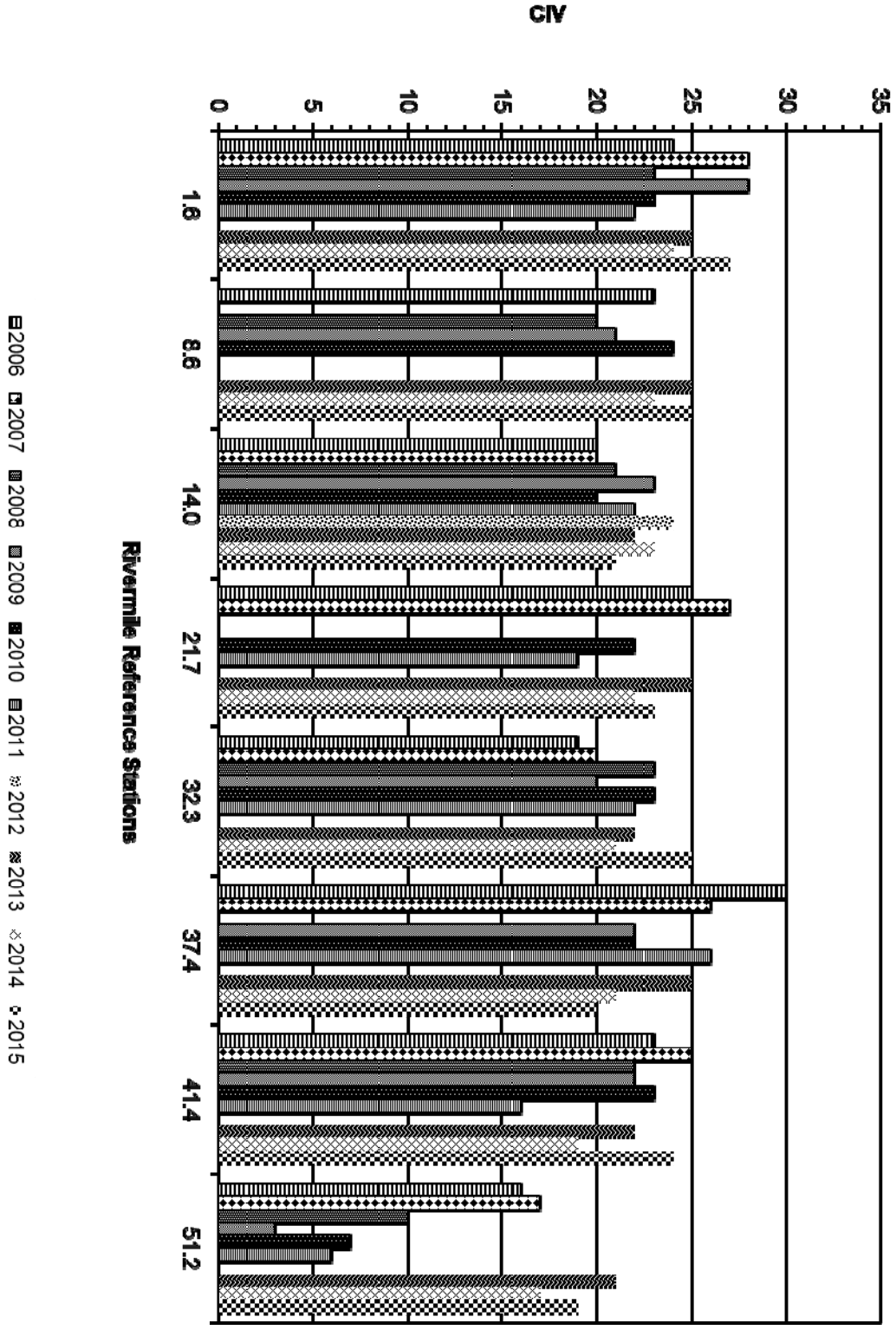
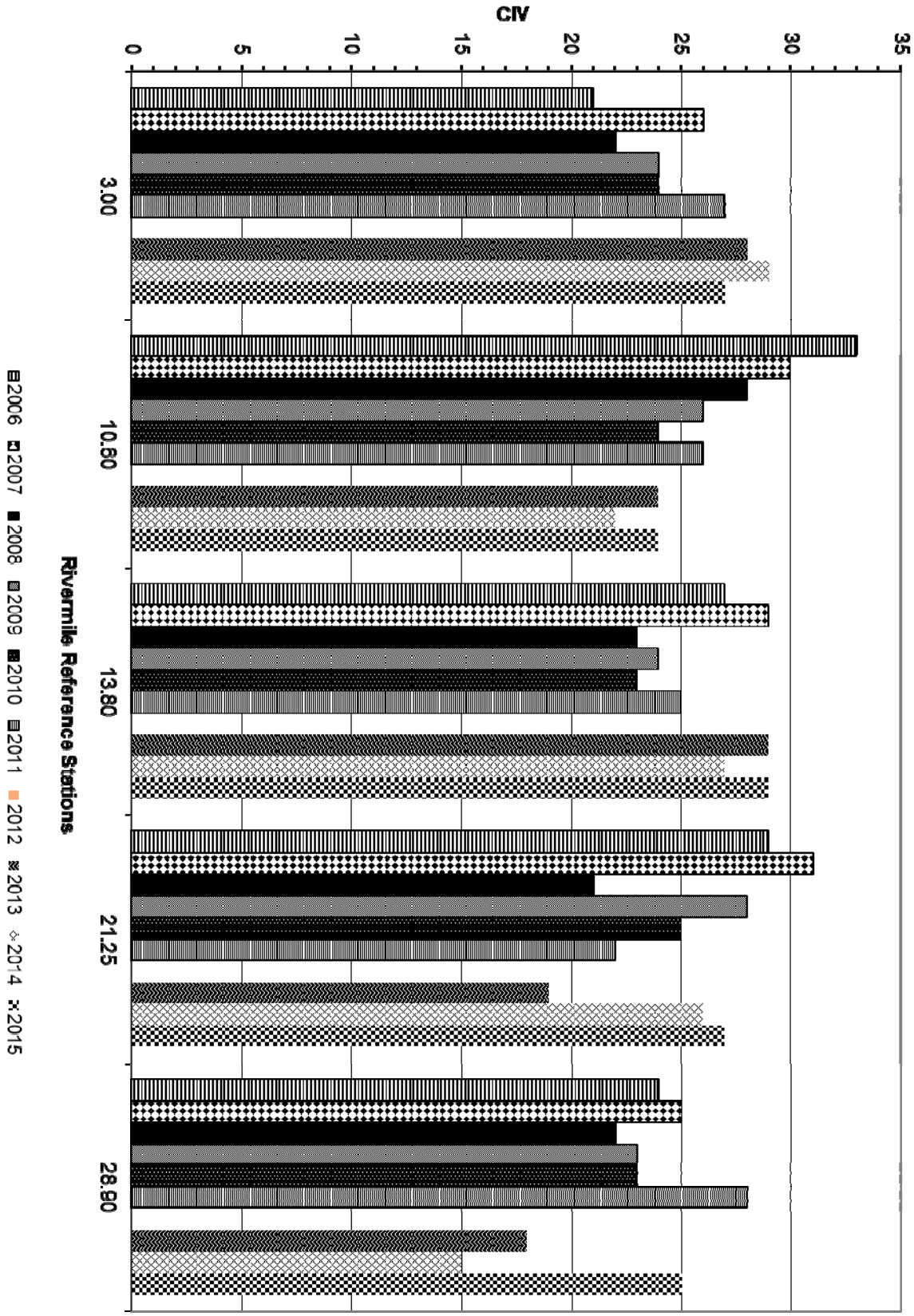


Figure 2.2: Greenville Creek 2006-2015 Mean CIV's by Reference Station



Appendix
2015 Data by Monitoring Station

STILLWATER RIVER																					
RM	DATE	WP	MF	ST	DO	CD	RI	OS	DA	DR	CR	BL	CF	SC	CL	SW	BF	AW	MI	PS	LE	CIV
1.60	5/28/2015	B	C	B		C	B	B		A	A	A	A		B	A		C	C		A	35
1.60	8/1/2015	A	C			C	B	B			A		A		A				C		A	23
1.60	8/27/2015	B	B			C	B	B				A	C		B			B			A	23
1.60	10/27/2015	A	B			B	A	B	B		B	A			C	B		C			C	27
8.60	5/2/2015	A	B	A		C	A	A	A		A	B		A		A	B	A	A			31
8.60	8/5/2015		C	B		C	B			A	A		A			A	B	B	B		A	24
8.60	9/7/2015	A	B			B	B						A					B			A	18
8.60	9/16/2015	A	C	A		C	A		A	A	A				A	A	C	C	C			28
14.00	5/14/2015		B	B		B	B		A		A	A					A		B			20
14.00	9/3/2015	A	B		A	C	B					B	A		A		A	B	B			24
14.00	10/21/2015		B	A		C	A		A			A			A				A		A	20
21.70	5/8/2015	A	B			B	B									A		C	A		A	17
21.70	7/7/2015	B	B		A	C	B	A			A	A			A	A	A	B	A			29
21.70	9/2/2015	A	B		A	C	B	A				B					B	A	B			23
32.30	6/7/2015	A	B				A	A	A	A	A		B	A	A	A	A			A		28
32.30	7/6/2015	B	B			C	C	A	A			C	A		A	B	B	B	A			28
32.30	8/23/2015	A	A	A			A				A		B	A			A			A		20
32.30	10/11/2015	A	B	A	A	A							A		A					A		24
32.30	12/22/2015	A	B			C	B		A			B	A	A			A	B	B			23
37.40	6/7/2015	B	A				A	A			A		B	A			A	A		A		21
37.40	8/23/2015	A	B	A				A			A		B	A						A	A	20
37.40	10/11/2015	A	B					A		A	B		A				A			A	A	18
41.40	5/2/2015	A	A			B	B	A	A		A	A	B		A		A	B	B			25
41.40	7/2/2015	A	A			A	A	B			A	A	B		A		A	A	A			26
41.40	11/3/2015		A			C	B	A			A	A			A			B	B			20
51.20	5/2/2015		A			A		A	A				A		A		A	A				17
51.20	9/3/2015		A			B		A				A						B	A			13
51.20	11/3/2015	A	B		A	B		A	A		A	A	A		A			B	B	A	A	28

GREENVILLE CREEK																					
RM	DATE	WP	MF	ST	DO	CD	RI	OS	DA	DR	CR	BL	CF	SC	CL	SW	BF	AW	MI	PS	LE	CIV
3.00	6/14/2015	B	B	A		B	B	A	A		A	A	A	A	A	A			A			33
3.00	7/27/2015	B	B			A	A	A		A		A	A	A			B	A	A			26
3.00	8/27/2015	C	B	C			A	A					B	A	A		A					22
10.60	6/16/2015	B	B	B		A	A	B	A				A		A					A	A	26
10.60	7/29/2015	B	B	A			A	B	A	A			A		B					A		24
10.60	9/5/2015	B	B			A	B	B					A		B			B	B			21
13.80	6/10/2015	B	B	C		B	C	C	B		A	B	A	A	A	B		A	C		A	35
13.80	9/3/2015	C	B			C	B	B				B	B			A	A		B			23
13.80	10/25/2015	A	B			C	B					C	A		A	B	B	B				28
21.25	7/2/2015	A	A			B	A	A		A	A	A	B					A	A			25
21.25	8/11/2015	B	A			C	B	B			A	B	A		A	A	C	A	A			28
21.25	11/17/2015	B	B			B	A	B			B	A	A		A	A		A	A			27
28.90	6/2/2015	A	B			A	A	A				A	B		A		A	A	A			24
28.90	8/11/2015	B	B			B	B	A			A	B	A			A	A	A	A		A	26
28.90	11/17/2015	A	A			A		A			A	A	A		A	A		A	A			24