

Biomonitoring



Description

Biological monitoring was conducted to assess stream quality while providing an environmental education service to the community. Under the supervision of ACD staff, high school science classes collected aquatic macroinvertebrates from a specific section of stream, identified the macroinvertebrates down to the family level, and used the biotic index to score overall water and habitat quality. These methods are based upon the knowledge that different families of macroinvertebrates have different water and habitat quality requirements. The families collectively known as EPT (Ephemeroptera, or mayflies; Plecoptera, or stoneflies; and Trichoptera, or caddisflies) are generally pollution intolerant, while other families can thrive in low quality water. Therefore, a census of stream macroinvertebrates provides important information regarding overall stream health.

Locations

Rum River

- [St. Francis High School](#)
- [Anoka High School](#)

Clearwater Creek

- [Forest Lake Community Learning Center](#)

Rice Creek

- [Totino Grace High School](#)

Monitoring Schedule

St. Francis High School

- Spring and Fall | 11 Classes | 296 Students

Anoka High School

- Spring | 4 Classes | 90 Students

Forest Lake Community Learning Center

- Fall | 1 Class | 15 Students

Totino Grace High School

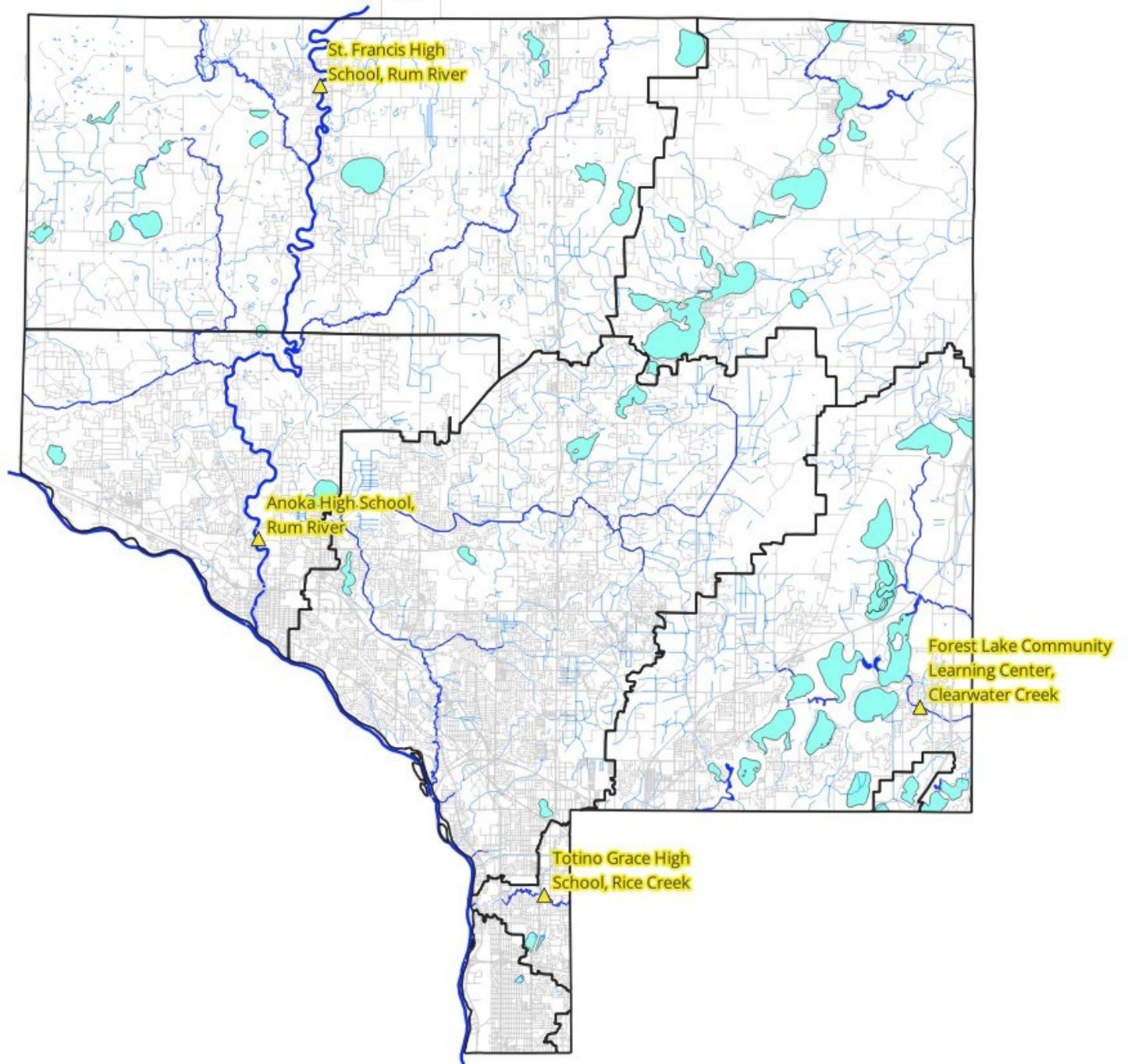
- Fall | 2 Classes | 40 Students

Parameters

- Number of invertebrate families
- EPT
- FBI

Biomonitoring Map

Below is a map of sites in Anoka County that were monitored in 2025.



St. Francis High School Rum River



2025 Biomonitoring Summary



Background

The Rum River originates from Lake Mille Lacs and flows south through western Anoka County where it joins the Mississippi River in the City of Anoka. Other than the Mississippi, the Rum River is the largest river in the county. In Anoka County, the Rum River has both rocky riffles as well as pools and runs with sandy bottoms. The river's condition is generally regarded as excellent. Large portions of the Rum River in Anoka County have a State "scenic and recreational river" designation.

This sampling site is located in the Rum River North County Park in St. Francis. This site is typical of Rum River habitat in northern Anoka County, containing a rocky bottom with numerous pool and riffle areas.

Discussion

All students who participated in 2025 sampling were part of sophomore biology courses. In recent years, the classes' capacity to complete full laboratory identification of samples has been limited. As a result, all specimens were identified to the best of the students' abilities for a rapid assessment in the field and then returned to the river. Thus, no preserved samples were available for ACD identification and inclusion in this report from 2022-2024. A small representative subsample was collected and preserved by ACD staff during spring 2025 monitoring. That data, along with more comprehensive data through 2021, is presented on the following page.

Historically, both chemical and biological monitoring indicate the good water quality of this river. Habitat is ideal for a variety of stream life, and includes a variety of substrates, plenty of woody snags, riffles, and pools. Taxa that are sensitive to pollution are found. Water chemistry monitoring done at various locations on the Rum River throughout Anoka County indicates that water quality is also good. Continued biological monitoring is recommended both as an education program and for long-term ecological condition monitoring.

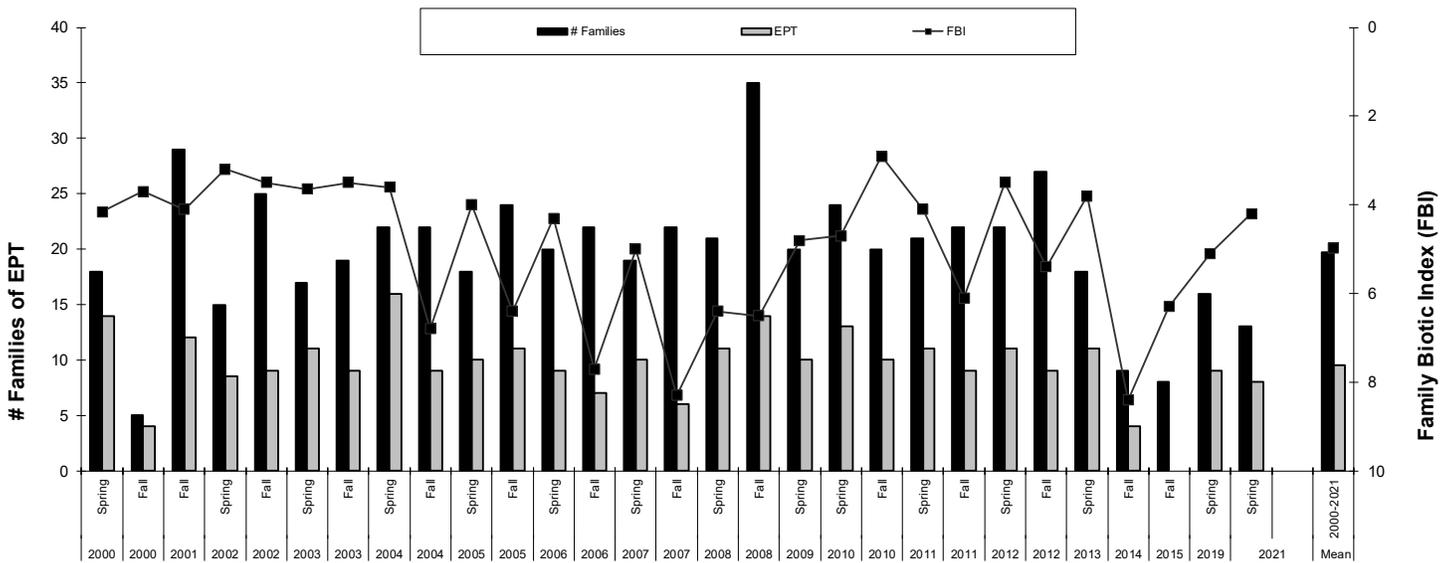
St. Francis High School - Summarized Results

2025 Student Data

Classes: 11

Students: 296 (approx. 2,420 total students since 2000)

The graph below presents data across all available years, while the table below includes additional details from the most recent five years. Complete data from 2021 is not available, as the number of individuals of each species collected were not recorded. The categories that rely on this information are left blank for 2021. Additionally, data from 2022-2025 has been excluded as no preserved samples are available for ACD identification.



Year	2013	2014	2015	2019	2021	Mean
Season	Spring	Fall	Fall	Spring	Spring	2000-2021
FBI	3.8	8.4	6.3	5.1	4.2	5.0
# Families	18	9	8	16	13	19.8
EPT	11	4	0	9	8	9.5
Date	20-May	24-Oct	22-Jul	19-May	26-May	
Sampled By	SFHS	SFHS	4-H	SFHS	SFHS	
Sampling Method	MH	MH	MH	MH	MH	
Mean # Individuals/Rep.	247.5	219	23	139		
# Replicates	2	1	1	1		
Dominant Family	Baetiscida	Corixidae	Cambaridae	Siphonuridae		
% Dominant Family	34.7	86.3	34.8	32.4		
% Ephemeroptera	54.1	3.7	0	46		
% Trichoptera	6.3	0.5	0.0	0		
% Plecoptera	30.3	2.3	0	18		

Anoka High School Rum River

2025 Biomonitoring Summary



Background

The Rum River originates from Lake Mille Lacs, and flows south through western Anoka County where it joins the Mississippi River in the City of Anoka. Other than the Mississippi, the Rum River is the largest river in the county. In Anoka County, the river has both rocky riffles as well as pools and runs with sandy bottoms. The river's condition is generally regarded as excellent. Large portions of the Rum River in Anoka County have a State "scenic and recreational river" designation.

This sampling site is located behind the Anoka High School. Historically, samples were collected from both the main river channel and a mucky backwater section, but a recent riverbank stabilization project prevented sampling from the main channel in 2025. This may explain some of the reduced metrics observed in 2025.

Discussion

Anoka High School students sample the Rum River annually. Results in 2025 were generally similar to the previous four years, with the exception of EPT percentage; in 2025, only 4% of total individuals collected were members of the EPT families, compared to 30% in 2024. However, in 2025, students still collected 18 different families of invertebrates, four of which were the more sensitive taxa (EPT), which is consistent with previous years. Overall, this is indicative of good river health. Over time, sampling results have varied; this is suspected to be due to factors other than river health.

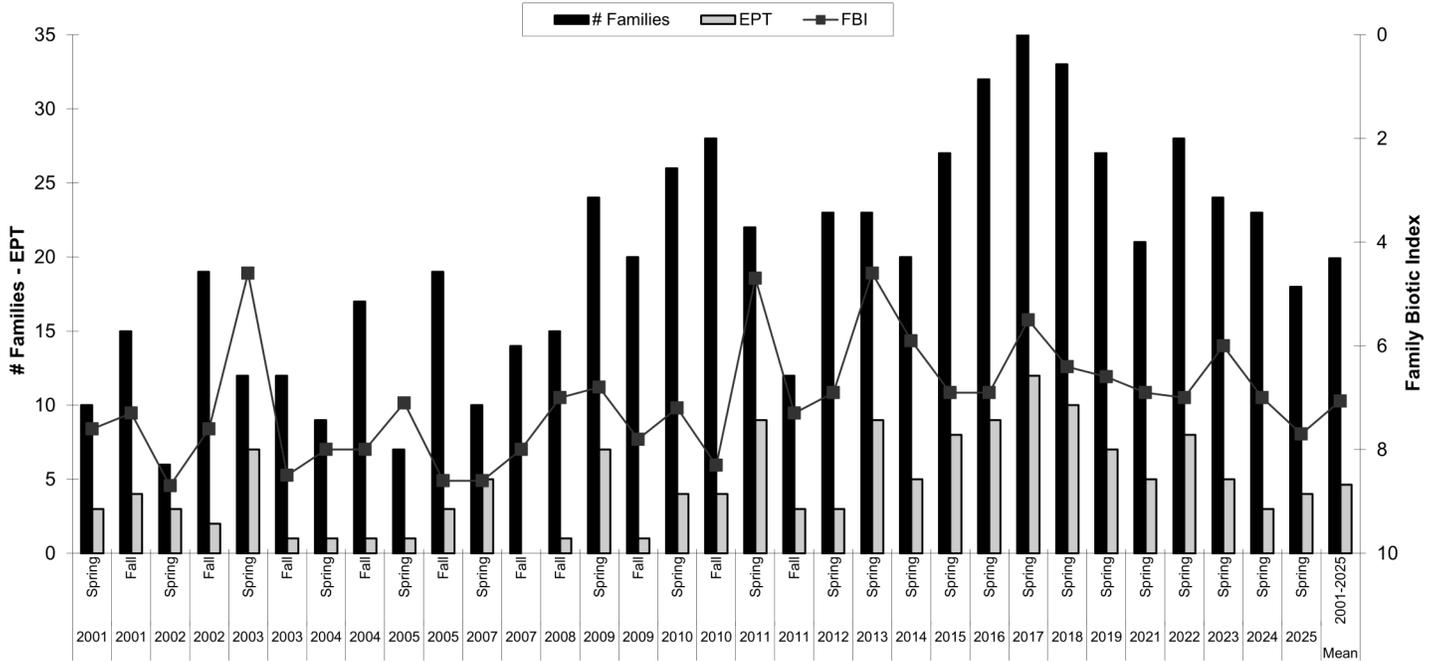
Both chemical and biological monitoring indicate above average water quality in the Rum River. Poorer results in some years may reflect sampling effort, increased emphasis on main channel sampling over time, river levels, and other factors rather than a shift in the biological community. Historically, biomonitoring near Anoka High School was conducted mostly in a backwater area with a mucky bottom, particularly during high or moderate water levels. That area tends to not be occupied by pollution intolerant families and has less diversity. When water levels are low, students are also able to sample in the main channel with its rockier bottom, more sensitive families, and greater diversity.

Anoka High School - Summarized Results

2025 Student Data

Classes: 4
 Students: 90 (approx. 1,765 total students since 2001)

The graph below presents data across all available years, while the table below includes additional details from the most recent five years.



Year	2021	2022	2023	2024	2025	Mean
Season	Spring	Spring	Spring	Spring	Spring	2001-2025
FBI	6.90	7.00	6.00	7.00	7.70	7.0
# Families	21	28	24	23	18	20.0
EPT	5	8	5	3	4	4.6
Date	11-May	10-May	10-May	10-May	2-May	
sampling by	AHS	AHS	AHS	AHS	AHS	
sampling method	MH	MH	MH	MH	MH	
# individuals	687	860	1090	376	276	
# replicates	1	1	1	1	1	
Dominant Family	Siphonuridae	Corixidae	Baetiscidae	Corixidae	Hyalellidae	
% Dominant Family	59.1	35.6	38.3	35.9	50.7	
% Ephemeroptera	64.2	18.8	44.1	27.7	3.6	
% Trichoptera	0	0	0	2.4	0	
% Plecoptera	0.4	0.7	0.5	0	0.4	
% EPT	64.6	19.5	44.6	30.1	4	

Forest Lake Area Learning Center Clearwater Creek

2025 Biomonitoring Summary



Background

Clearwater Creek originates in Bald Eagle Lake in northwest Ramsey County and flows northwest into Peltier Lake. The land use in the area is a mix of residential and agricultural, with some small commercial sites scattered throughout. Immediately surrounding the sampling site, land use is entirely residential and developed. The streambanks at the site are steep and actively eroding in spots. The streambed is gravelly or sandy. The stream is 6-12 inches deep during base flow conditions and approximately 10-15 feet wide. The sampling site is located behind the Centerville City Hall.

Discussion

Overall, biomonitoring data indicates average stream health in this section of Clearwater Creek. In 2025, students collected 9 different families of invertebrates, matching the 2024 total but down from the 13 families collected in 2023. Since 2009, the FBI score has been lower (indicating an increase in pollution-intolerant species & better stream health) than the majority of previous years. This apparent improvement seems driven by the increased dominance of the invertebrate community by the amphipod families Gammaridae and Hyallellidae, which have moderate tolerance values. Prior to 2009 these families had not been dominant and more EPT taxa were present. Average number of sensitive EPT taxa has decreased from approximately four per year prior to 2009 to rarely more than two thereafter. So, while FBI scores indicate an apparent improvement in stream health, the number of EPT taxa indicate the opposite. On the whole, the invertebrate community is indicative of a less healthy condition than before 2009. Even before 2009, the invertebrate community reflected moderate at best stream health.

Clearwater Creek's biological community is probably limited by a combination of habitat, hydrology, and water chemistry factors. This creek has been highly modified and large sections have been developed into a straightened ditch. Clearwater Creek is listed as impaired for DO as well as fish and invertebrate biota. Bald Eagle Lake, which is impaired for nutrients and serves as the Creek's headwaters, may be contributing to the low oxygen levels in the creek.

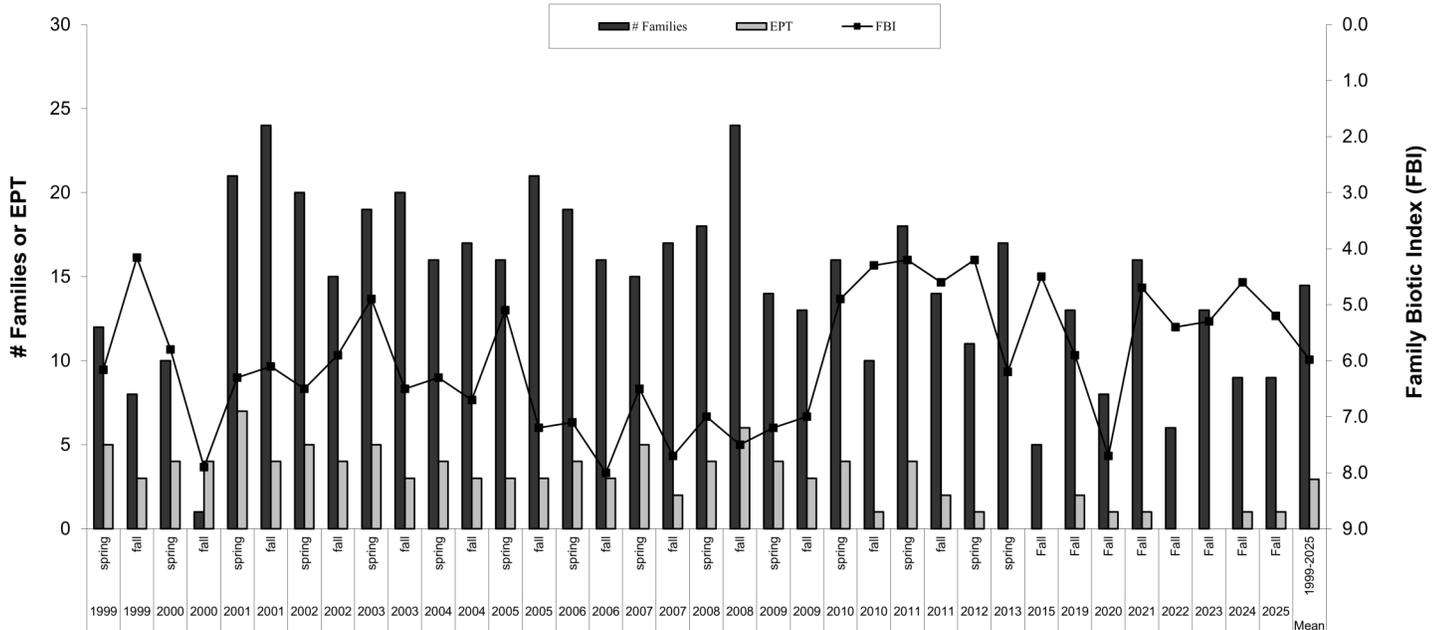
Forest Lake Area Learning Center - Summarized Results

2025 Student Data

Classes: 1

Students: 15 (approx. 716 total students since 1999, including Centennial High School)

The graph below presents data across all available years, while the table below includes additional details from the most recent five years.



Year	2021	2022	2023	2024	2025	Mean
Season	Fall	Fall	Fall	Fall	Fall	1999-2025
FBI	4.7	5.4	5.3	4.6	5.2	6.0
# Families	16	6	13	9	9	14.8
EPT	1	0	0	1	1	3.1
Date	25-Oct	14-Oct	16-Oct	9-Oct	20-Oct	
sampling by	ACD	FLALC	FLALC	FLALC	FLALC	
sampling method	MH	MH	MH	MH	MH	
# individuals	191	113	138	138	118	
# replicates	1	1	1	1	1	
Dominant Family	Gammaridae	Gammaridae	Gammaridae	Gammaridae	Gammaridae	
% Dominant Family	74.3	69	59.4	54.3	55.1	
% Ephemeroptera	0.0	0	0	0	0	
% Trichoptera	1.6	0.0	0.0	0.0	6.8	
% Plecoptera	0.0	0.0	0.0	26.1	0.0	
% EPT	1.6	0	0	26.1	6.8	

Totino Grace High School Rice Creek

2025 Biomonitoring Summary



Background

Rice Creek originates from Howard Lake in east central Anoka County and flows southwest through the Rice Creek Chain of Lakes, eventually reaching the Mississippi River. Sampling for invertebrates has been historically conducted in the Rice Creek West Regional Trail Corridor, which encompasses a large portion of the stream's riparian zone. The land around the sampling site is forested but outside of this wooded buffer, the watershed is highly urbanized and the creek receives stormwater runoff from a variety of urban sources. The streambed has a rocky bottom with pools and riffles.

Discussion

At this site, Rice Creek has a macroinvertebrate community indicative of poor stream health. While the number of families found in 2025 is above the long-term average for Anoka County streams, most are generalist species that can tolerate degraded water conditions, with a FBI value of 4.4 (fairly good). The number of EPT families present has been below the county average in all years, and decreased from 4 families in 2024 to 2 families in 2025. EPT families are generally pollution-sensitive, but the caddisfly family Hydropsychidae is an exception to that rule; this family thrives in relatively poor environmental conditions and was once again a primary family found in 2025.

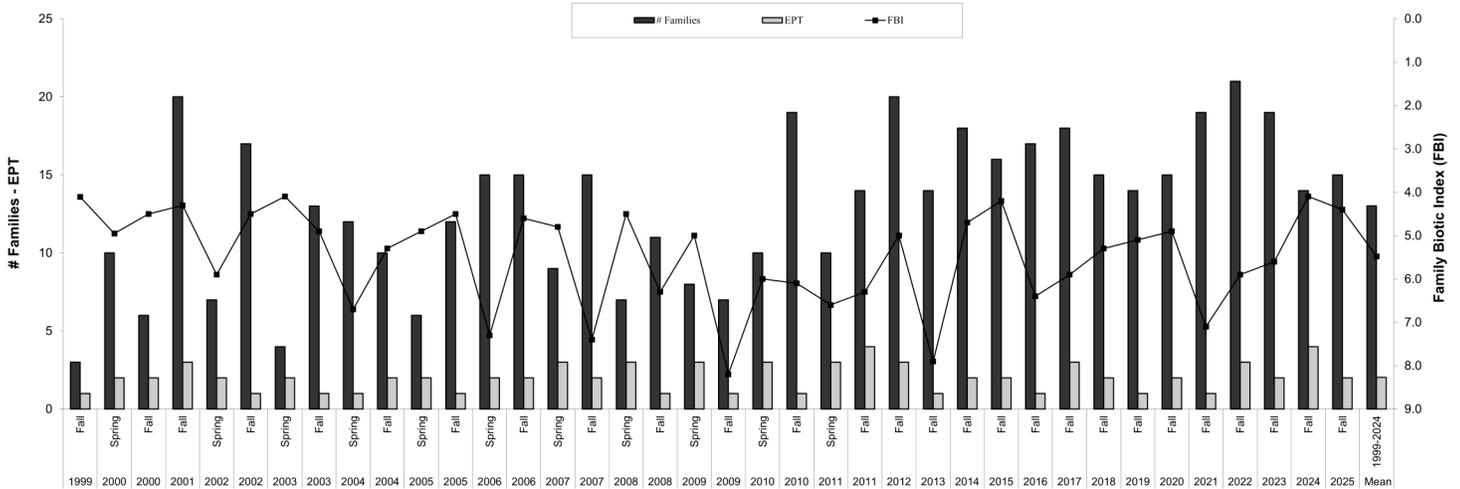
The poor macroinvertebrate community in Rice Creek is likely due to poor water quality and the flashy flows observed during storm events, not poor habitat conditions. Habitat at the sampling site and the surrounding area is good, in part because of habitat improvement projects implemented in the past. The creek has diverse characteristics including runs, riffles, and pools. The area immediately surrounding the stream is predominately a buckthorn forest, with paved walking trails. However, outside of this wooded corridor, the watershed is urbanized and storm water inputs are likely influencing the degraded water quality. During storms events, water levels in the creek can rise quickly. This portion of Rice Creek is impaired for both fish and invertebrate biota.

Totino Grace High School - Summarized Results

2025 Student Data

Classes: 2
 Students: 40 (approx. 1,520 total students since 1999)

The graph below presents data across all available years, while the table below includes additional details from the most recent five years.



Year	2021	2022	2023	2024	2025	Mean
Season	Fall	Fall	Fall	Fall	Fall	1999-2025
FBI	7.1	5.9	5.6	4.1	4.4	5.5
# Families	19	21	19	14	15	13.0
EPT	1	3	2	4	2	2.0
Date	12-Oct-21	11-Oct-22	9-Oct-23	8-Oct-24	29-Sep-25	
Sampled By	TGHS	TGHS	TGHS	TGHS	TGHS	
Sampling Method	MH	MH	MH	MH	MH	
# Individuals	326	256	173	280	219	
# Replicates	1	1	1	1	1	
Dominant Family	Hydropsychidae	Gammaridae	Gammaridae	Hydropsychidae	Hydropsychidae	
% Dominant Family	32.2	24.6	43.9	17.1	22.4	
% Ephemeroptera	0	2	0	0	0	
% Trichoptera	5.8	23.4	0	0	44.3	
% Plecoptera	0	0	0	1.7	0	
% EPT	5.8	25.4	0.0	1.7	44.3	

Partner Appreciation

ACD would like to thank our partners for continuing to promote biological monitoring. This long-standing program combines environmental education to high school students and provides additional data to assess stream water quality.



Additional water quality monitoring information can be found on the Anoka Conservation District Water Almanac :

<https://www.anokaswcd.org/water-almanac.html>

