3.5 Ottawa River

3.5.1 Monitoring Organizations: Currently, the only organization in the LEBAF Network monitoring the Ottawa River/Ten Mile Creek Watershed is the Community Water Action Toledo (CWAT). CWAT aims to increase understanding of water quality in Lake Erie tributaries and drive improvement for water quality across Northwest Ohio through aligning sampling protocols with LEBAF, harnessing the existing strengths of collective programs, and engaging a wide range of volunteers in citizen science. Participating members in 2024 included Metroparks Toledo, Partners for Clean Streams, the Toledo Zoo, and TMACOG. Monitoring began in 2023 and continued through 2024.

3.5.2 Station Summary: LEBAF monitoring at 4 stations began in 2023. The most upstream site, CWAT-1, is located on Tenmile Creek, a headwater of the Ottawa River, in Sylvania, with urban/residential adjacent land use and grassy buffers. CWAT-2 and CWAT-4 are in the middle stretch of the monitored stretch of the stream, both located in parks and with wooded buffers, and urban/residential adjacent land use. CWAT-5 is within the zone of lacustrine influence, with no buffers and urban/residential adjacent land use. All but CWAT-1 are located in the city of Toledo. We combined analyses for Tenmile Creek and the Ottawa River. All summary information includes both Ottawa River and Tenmile sample results, referred to collectively as the Ottawa River throughout the remainder of the report.

3.5.3 Summary of 2024 Findings and Analysis

Table 14. Ottawa River Summary Statistics and Exceedances - 34 samples, 3 stations

Parameter	Mean	Median	Min	Max	Sample Count	N. Exceedance	% Exceedance
Conductivity Biocondition	784.06	828.50	9.40	1,485.00	34.00	29.00	85.29
DO (mg/L)	8.22	7.80	5.04	17.07	34.00	0.00	0.00
pH	8.17	8.01	7.73	9.55	34.00	2.00	5.88
Water Temperature	19.75	21.40	10.70	29.90	34.00	5.00	14.71

Table 15. Ten Mile Creek Summary Statistics and Exceedances - 11 samples, 1 station

Parameter	Mean	Median	Min	Max	Sample Count	N. Exceedance	% Exceedance
Conductivity Biocondition	802.24	928.00	12.00	1,431.00	11.00	8.00	72.73
DO (mg/L)	10.03	10.38	7.92	12.13	11.00	0.00	0.00
pH	8.19	8.25	7.74	8.37	11.00	0.00	0.00
Water Temperature	19.03	22.00	10.00	24.00	11.00	1.00	9.09

pH – Data collected in 2024 do not indicate pH as an impairment concern in the Ottawa River based on LEBAF standards.

DO – There were 0 exceedances out of 45 samples (0%) observed. Overall, DO varies as expected seasonally/temporally. 100% of DO values recorded on the Ottawa River during the 2024 season were within the LEBAF analytical benchmark of >=5 mg L^{-1}.

Temperature – 6 exceedances out of 45 samples (13.33%) were observed. Exceedances occurred on April 18, May 21, May 26, and July 21; 1 exceedance occurred at CWAT-1 Sylvania Northview, Ten Mile Creek, 1 exceedance occurred at CWAT-2 Wildwood Metropark, 2 exceedances occurred at CWAT-4 Ottawa Park, and 2 exceedances occurred at CWAT-5 Howard Pinkley Landing. These stations experienced air temperatures at or above average throughout the sampling season, including leading up to these sampling dates. The majority (~87%) of collected data fell within LEBAF standards, indicating that temperature is not an impairment concern on the Ottawa River in 2024.

Conductivity – The Ottawa River Watershed falls in the Huron-Erie Lake Plain ecoregion, which serves as the reference for our observed values. In 2024, conductivity values in the Ottawa River ranged from 120 to 1485 µS cm-1 with a mean value of 793.15 µS cm-1. The mean and maximum values are higher than the 50th and 95th percentile values of 653 µS cm-1 and 1107 µS cm-1, respectively, for Huron-Erie Lake Plain streams reference. The mean value observed is comparable to the 75th percentile reference value of 778 µS cm-1. This comparison with the ecoregion references shows some overlap with our dataset and provides additional confidence in using our conductivity results, but also suggests that the Ottawa River is exceeding and/or at the top end in comparison to reference streams for the ecoregion.

The Ohio EPA also sets a conductivity threshold for evaluating macroinvertebrate health: < 412 µS cm-1 promotes a healthy community, between 412 and 655 µS cm-1 suggests a declining community, and > 655 µS cm-1 indicates a degraded community. In 2024, 7/45 samples fell within an acceptable range, 10/45 samples falling in the degrading range, and 28/45 samples > 655 µS cm-1. There was no clear upstream/downstream pattern to the exceedances, and no clear seasonal pattern. Salinity analysis, a calculated parameter based on directly measured conductivity values, indicated a 21% exceedance rate in the Ottawa River, with the highest exceedance rate at the most upstream station, CWAT-1. All sites measured on the Ottawa River fall within urbanized areas. Analysis of local weather data during the 2024 sampling season indicated that high salinity results coincided with prolonged dry periods abnormally high air temperatures leading up to the sampling date, with an onset of moderate to severe drought conditions in late July through the end of 2024. Overall, this data suggests that macroinvertebrate communities in the Ottawa River are primarily degraded, and that conductivity is a concern in the Ottawa River watershed**.**

3.5.4 Summary of 2024 Conclusions, Recommendations, Actions

Table 16. Ottawa River Water Quality Summary

pH	***Temperature***	***DO***	***Conductivity***
Acceptable	Acceptable	Acceptable	Likely threat, impacts; Degraded

Overall, data collected in 2024 suggest that the Ottawa River supports aquatic life based on LEBAF benchmarks for pH and DO. Persistently high conductivity values in the watershed are a cause for concern due to potential impacts on aquatic life, and based on LEBAF standards the Ottawa River is considered degraded, with likely threats and impacts to ecosystems. We recommend continuing LEBAF monitoring, which will give a more complete picture of stream health and baseline conditions over time. At sites that seem to have local conditions with exceedances in a specific parameter (CWAT-4, CWAT-5), we recommend increased monitoring where feasible, specific to the parameter of concern, and in response to climate events when possible.

At all sites where feasible and suitable, we recommend initiating macroinvertebrate monitoring several times throughout the sample season using ODNR's SQM method. Regular monitoring of the macroinvertebrate community where possible, along with continued monitoring of conductivity per LEBAF standards, will expand understanding of the effect of conductivity in the watershed. For CWAT-1, CWAT-2 and CWAT-4 where multiple salinity exceedances were noted, increased monitoring at these locations should be considered, as well as direct sampling of salinity in addition to the calculated metric. Coordination with groups involved in research on salinity and chlorides in the watershed should also be explored.