ENCLOSURE 5

2024 Addendum to the Statewide *E. coli* Total Maximum Daily Load
Comments and Responses

The 2024 Addendum to the Statewide *E. coli* Total Maximum Daily Load (TMDL) and Addenda to other concentration-based *E. coli* TMDLs, were open for public comment from December 8, 2023, through January 12, 2024. During the public comment period, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) received several written questions and comments, as follows (none resulted in a change to the TMDL addenda).

Comments from Tim Krause, P.E.; Director of Engineering; Granger Waste Services:

Granger Comment 1:

"The data for Assessment Unit MI040500040611-01 was collected within a very narrow window. Furthermore, there appears to be multiple variables within the data provided. These include the relationship between ambient temperature and *E. coli* concentrations, location of where the samples were collected, water lever and hydrology, and speciation of *E. coli*. Please provide justification for the determination that further consideration of these variables is not necessary prior to determining impairment."

EGLE Response 1:

In the determination of *E. coli* Water Quality Standards (WQS) violations, neither the TMDL or the Assessment Methodology require the collection and interpretation of these supplemental parameters. Supplemental water quality parameters and weather data are typically collected along with *E. coli* samples, and the results are uploaded promptly to the federal database (Water Quality Portal) within 6 months of study completion and prior to the Integrated Reporting cycle in which it is used. This includes water and air temperature, rainfall prior to each sampling event, dissolved oxygen, pH, and conductivity. Microbial Source Tracking is addressed in Comment 6 below. These parameters are typically presented and discussed, if warranted, in the Annual Bacteria Report for Rivers and Streams, available from our *E. coli* in Surface Waters Web site.

Granger Comment 2:

"Samples should be taken year-round to get more representative data of *E. coli* in a waterbody. In fact, looking at all the data used for the Looking Glass River, the only data available is from the months July, August, and September. Have any samples been taken in the months October through June? For a more representative number, more 30-Day Geometric Means are needed, specifically in months where the temperature is cooler, and the total body contact (TBC) value is in effect, which includes the months of June through October. There are also no samples taken from November to April, where only the partial body contact (PBC) value (1,000 cfu/100mL) is in effect. Please provide the justification of how the current data is adequate for making an impairment determination."

EGLE Response 2:

The Assessment Methodology specifies the minimum number of samples needed to assess a water body for each biennial Integrated Report. EGLE followed its 2024 Assessment Methodology in determining the attainment status of all the stream segments in the draft

Addendum to the Statewide *E. coli* TMDL. The Assessment Methodology for the next Integrated Report (2026) will be available for public review and comment, prior to implementation.

By way of explanation, critical conditions were identified in the development of the Statewide TMDL. The "critical condition" is defined as the set of environmental conditions (e.g., flow, loading, and other water quality parameters) that result in violation of the *E. coli* WQS. As you have stated, "*E. coli* concentrations vary seasonally with the peak concentrations occurring during the high temperatures of the summer months." EGLE targets the critical conditions of warmer water and dry weather by selecting the middle of the summer for most pathogen assessment monitoring. The wet weather critical condition is not targeted due to logistic difficulties, but typically a wide range of flow and weather conditions are captured by our five-week monitoring approach. This is in alignment with the TMDL critical conditions section, and conservative from a public health perspective since summer is the time of the year when most people are recreating.

Granger Comment 3:

"There is only one sample location for the entire Assessment Unit MI040500040611-01. This unit appears to be much more than 5 miles of river and streams. How does this impact the determination of impairment? Are there any plans to sample at other locations in this unit?"

EGLE Response 3:

EGLE's Assessment Methodology establishes that an assessment unit may consist of all water bodies in a 12-digit HUC (as a maximum) or specific stream segments or lakes in a 12- digit HUC. Beyond using the 12-digit HUC as a base assessment unit, contextual information is considered when determining the geographic extent that data collection points represent, including land use patterns, additional monitoring sites with concurring or differing results, and spatial hydrologic changes such as the presence of impoundments. In HUC 040500040611, segment 611-02 was split from 611-01, because 611-02 (the Husted-Landenburg Drain) exceeded both the TBC and PBC WQS. Thus, segment 611-01 is the remaining portion of the 12-digit HUC, which contains a portion of mainstream Looking Glass River and many small tributaries (each generally less than two miles in length). The most downstream portion of the Looking Glass River in this segment (611-01) exceeded the TBC WQS on 2 of 5 events (40% exceedance rate) and exceeded the 30-day geometric mean; therefore, it was established as impaired. There are no impoundments or major land use changes in the mainstream Looking Glass in 611-01. With regards to further monitoring, EGLE accepts monitoring requests from outside agencies and the general public. Please submit your monitoring requests using this Monitoring Request form. The submittal of a monitoring request does not guarantee that it will be fulfilled. The department uses a 5-year rotating basin schedule for monitoring; therefore, the Looking Glass with be up for re-monitoring again in 2027.

Granger Comment 4:

"In the Staff Report titled "Bacterial Monitoring Results for Michigan Rivers and Streams: 2017," it is stated that a positive relationship is indicated with respect to water level and E. coli concentration. Water level data continues to be absent from the information provided in the draft TMDL regardless of the stated relationship between concentration and water level. Please explain how this variable is accounted for?"

EGLE Response 4:

The relationship between *E. coli* concentration and water level varies by monitoring location. Determining this relationship is not a requirement of the TMDL because Michigan's WQS applies during all flow conditions; however, EGLE does collect and provide this information on a site-by-site basis whenever it is logistically feasible to measure water level. This information is contained in the applicable Annual Bacterial Report for Rivers and Streams (available at Mi.gov/EGLEEcoli); this information is not part of the TMDL addendum. If a report is in draft form, the raw data is available upon request. Only one site in the Looking Glass was monitored for *E. coli* in 2017; Remey-Chandler Drain. Water level is shown in a chart, along with *E. coli*, on page B-37 of the 2017 report.

Granger Comment 5:

"There is only one value of a 30-Day Geometric Mean for Assessment Unit MI040500040611-01, which is then used to calculate percent 30-Day TBC Exceedance. While 100 percent is technically correct in terms of percent exceedances, it is misleading when there is only one value available. Furthermore, the data used was calculated from samples taken August to September, notably the time of the year when the highest *E. coli* concentrations are observed."

EGLE Response 5:

The 30-day geometric mean TBC WQS only applies from May 1 through October 31, per Rule 62 of the Part 4 WQS, promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. EGLE believes that targeting the time of summer when people are swimming, which coincides with the time when surface waters are warmest and *E. coli* is highest, is an appropriate and conservative approach to protect our citizens and visitors. Since a 30-day geometric mean is the result of 5 monitoring events, only one 30-day geometric mean is needed to determine compliance. A percent exceedance rate is calculated for all sites with 1 or more 30-day geometric means because some sites have many 30-day geometric means and a 10% exceedance threshold is applied, per our Assessment Methodology.

Granger Comment 6:

"Has EGLE considered further testing as a means for understanding sources, such as *E. coli* speciation? Prior to instituting a regulatory program that would shift the burden of performing these tests onto the regulated community, it would seem a prudent path to include this as part of initial assessment and determination for impairment."

EGLE Response 6:

EGLE believes you are referring to the technique known as fecal Microbial Source Tracking (MST), which uses DNA "fingerprinting" to identify the presence of host-specific fecal bacteria in water samples as a means of determining potential sources to a pathogen-impaired water body. EGLE conducts MST to narrow down likely sources to surface water, such as raw human sewage or livestock manure; however, we do not have a WQS for the different organisms (typically *Bacteroides*) that are used in source tracking. Our *E. coli* WQS is based on recommendations from the United States Environmental Protection Agency (USEPA), which were derived from epidemiological studies linking the incidence of disease in beachgoers to *E. coli* surface water measurements. No such USEPA recommendations exist for the host-specific organisms used in DNA source tracking. MST is significantly more expensive than *E. coli* monitoring and is therefore typically reserved for small streams (with watersheds of a practical size for remediation actions), with extremely high *E. coli* and unknown sources. National Pollutant Discharge Elimination System storm water permits require implementation of structural and operational best management practices to reduce or eliminate sources of pollution. MST is a tool that can be used to identify sources contributing *E. coli* to a surface water from a storm sewer system.