Analysis of Indiana's Section 303(d) List and the State's Integrated Report (IR) Submittal for 2022

Consistent with EPA's IR Guidance, Indiana submits an Integrated Water Monitoring and Assessment Report every two years, which combines the listing requirements of Sections 303(d), 305(b) and 314 of the Clean Water Act. The Indiana Department of Environmental Management (IDEM) submitted its 2022 IR on April 1, 2022.[1]

IDEM's 2022 IR submittal to EPA included the following information:

- Submission Cover Letter
- IR Narrative
- 2022 Integrated Report Tables (*Appendix A*)
- 2022 Integrated Report Figures (*Appendix B*)
- IR Metadata and Definitions (*Appendix C*)
- IDEM'S 305(B)/303(D) Monitoring, Assessment, Reporting and Listing Schedule (*Appendix F*)
- IR Comprehensive Aquatic Life Use and Recreational Use Assessments (*Appendix H*)
- IR Lake Trophic Status and Trends of Indiana Lakes (*Appendix I*)
- Indiana's 303(d) List of Impaired Waters
  - 303(d) Narrative (*Appendix J*)
  - 303(d) Related Tables (*Appendix L*)
    - IDEM's Finalized 303(d) List of Impaired Waters (Category 5) (***2022 IR data in ATTAINS***)
- IR Consolidated List (Categories 1-5) (*Appendix M; and* ***2022 IR data in ATTAINS***)
  - IDEM's 2022 Consolidated Assessment and Listing Methodology (CALM) (*Appendix G*)
  - Status of Category 4 Waters (*Appendix D*)
    - IDEM'S Priority Ranking and 2022-2024 Schedule for Total Maximum Daily Load Development (*Appendix E*)
  - USEPA comments and IDEM's responses to USEPA comments on the 303(d) List of Impaired Waters (*Appendix K*)

A. IDEM's Water Quality Assessment and Listing Methodology

Indiana's IR identifies waterbody segments or assessment units (AUs) that are associated with individual waterbodies within a 12- or 14-digit hydrologic unit code (HUC) watershed that ranges in size from less than five acres (less than one square mile) to about 28,000 acres (almost 44 square miles). These waterbody AUs are assigned a unique identifier (AU ID) in the Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System

[1] On April 1, 2022, EPA received Indiana's IR package (including its final 2022 Section 303(d) list) that was submitted through the ATTAINS, which is EPA's electronic system to accept and track 303(d) submissions and actions. ATTAINS submittal includes directly entered assessment data as well as uploaded documents. Notification was also made by email. See email from Paul McMurry to Tera Fong with attached submittal letter from Indiana Department of Environmental Management (IDEM) dated April 1, 2022.

(ATTAINS) with which all the assessment information for that waterbody is associated. Indiana lakes and reservoirs, including open waters of Lake Michigan, are assigned a single AU ID with sizes reported in acres. Indiana's Lake Michigan shoreline is divided and assigned AU IDs in accordance with the 8-digit HUC in which they are located and are reported in miles. Rivers and streams are assigned AU IDs in accordance with the 12- or 14-digit HUC in which they are located and are reported in miles. For large rivers with more than 1,000 square miles of drainage area, the AU IDs for mainstem non-wadeable reaches within their 12- or 14-digit HUCs are distinguished from those smaller, wadeable streams so that issues such as sampling techniques, which might bias results, can be considered within a class of streams. With regard to Indiana's flowing waters, AU sizes vary widely, and a single segment may or may not represent the entire river or stream with which it is associated.

In order to assess the quality of Indiana's waters, IDEM developed a surface water quality monitoring strategy, which calls for monitoring each of Indiana's major water management 9 basins on a 9-year rotating basis[2] using the state's data-collection sampling programs (Watershed Monitoring, Fixed Station Monitoring, *E. coli* Monitoring, Fish Community Monitoring, Fish Tissue Monitoring, Macroinvertebrate Community Monitoring, Special Projects, and Clean Lakes). The water quality assessment process is applied to each data-collection sampling program. The individual assessments are then integrated into a comprehensive assessment for each waterbody AU by use designation: aquatic life support, fish consumption, drinking water supply, and recreational use.

Water quality assessments are done by evaluating and coordinating data from site specific chemical (water, sediment and fish tissue), physical (habitat, flow data), and biological (fish community, macroinvertebrates, and *E. coli*) monitoring of Indiana's rivers, streams, and lakes. Chemical data for toxicants (metals[3], polynuclear aromatic hydrocarbons (PAHs), pesticides, ammonia, and free cyanide), conventional water chemistry parameters (dissolved oxygen, pH, temperature, and anions), and bacteria (*E. coli*) were evaluated for compliance with Indiana's Water Quality Standards, 327 IAC Article 2.[4]

Lake assessments pursuant to Section 314 of the CWA were based on the Carlson's Trophic State Index.[5] Declining, or extirpated Cisco populations and the presence of exotic and potentially toxic blue-green algae species were also considered when evaluating lake water quality for aquatic life use. For drinking water reservoirs, taste and odor were also considered as potential indicators of water quality problems.

1. New Method for Assessing Total Metals Data

For the 2022 integrated reporting cycle, IDEM has implemented a new method for evaluating metals data for waterbodies where only total recoverable metals' data are available. The

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[2] See Figure 1 in Appendix B, and Figure 1 in Appendix G of the 2022 Indiana IR.

[3] With regards to IDEM's WQ assessments for metal toxicants, EPA is taking a partial disapproval action with respect to certain metals causes of impairment on Indiana's 2022 Section 303(d) lists. Refer to Sections III.D. ii and iii of Enclosure 1 for additional details.

[4] See IR 2022 Appendix G pages 4-32 and Appendix G Tables 2-15.

[5] See IR 2022 Appendix G Table 15.

method developed conversion factors to determine the dissolved portion of the sample where only total recoverable metals were collected. By using this method IDEM is using existing and readily available data in making listing determinations for metals listings. This is based on the methodology EPA develop for the 2020 list.[6]

B. IDEM's Removal of Waterbody AUs and Impairments from the 303(d) List

States must provide support for the decision to no longer list waters.[7] To facilitate EPA's review, States should highlight those segment/pollutant combinations that have been removed from their previous 303(d) lists and provide detailed rationales for each delisting. Upon request from EPA, States must demonstrate "good cause" for not including waters on the list.[8] Good cause includes but is not limited to: more recent or accurate data; more sophisticated water quality monitoring; flaws in the original analysis that led to listing of the water; or changes in conditions.

IDEM identified the following reasons for the waterbody AU and impairment delistings under the 2022 listing cycle:[9]

a. New data indicates that applicable WQS are now being met.
b. A TMDL has been completed, and the waterbody AU is expected to meet WQS after implementation of the TMDL (Category 4A).
c. IDEM determined that the original listing was incorrect.

In its 2022 IR submittal, IDEM identified the waterbody AUs and impairments previously listed on Indiana's 303(d) list (Category 5) that are being delisted.[10] Table 2 of Enclosure 3, identifies waterbody AUs that no longer appear in Category 5 for any impairment under the corresponding 2020 cycle. Table 3 of Enclosure 3 identifies waterbody AUs that remain in Category 5 but for which certain impairments are being delisted under the corresponding 2022 cycle. In 2022, a total of 57 waterbody AUs with 68 impairments were entirely delisted from Category 5, and 192 impairments were delisted from waterbody AUs that remain listed in Category 5 for other impairments. Of the 192 impairments delisted EPA disagrees with the delisting of 106 of these impairments which are identified in Table 4 of Enclosure 3. With the exception of the waters identified in Table 4 which are also identified as bolded in Tables 2 and 3, EPA finds that IDEM's delistings identified in Tables 2 and 3 of Enclosure 3 are appropriate, given the associated delisting rationales, and that good cause has been demonstrated for not including these waterbody AU/impairment combinations.

1. Removal of Waterbody AUs and Metal Impairments (Added to the 2020 list by EPA) from the 303(d) List

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[6] See Appendix G pages G-11- G-13.
[7] See 40 C.F.R. § 130.7(b)(6); and Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (EPA, July 29, 2005).
[8] See 40 C.F.R. § 130.7(b)(6)(iv)
[9] See Tables 2 - 4 under Section 2 of Enclosure 3 for individual delisting rationales.
[10] See Appendix L of the 2022 Indiana IR; and Delisting Rationales provided under ATTAINS electronic submission.

EPA added 115 waters with 117 metals impairments to the State's 2020 list. IDEM delisted these impairments in the 2022 list placing them instead in category 3 (insufficient information). EPA is disapproving the removal of 106 of these listing and is adding these waters to Category 5 of IDEM's 2022 303(d) list based on the original listing and new data and information. See Enclosure 1 for information and discussion of adding these metals listings.
EPA concurs with IDEM's removal of 11 of these metal impairments from Indiana's 303(d) list in the 2022 cycle (see Table 4 of Enclosure 3) based on new data.

C. IDEM's Waterbody AUs and Impairments Added to the 303(d) list

The State has added certain waters to its 2022 Section 303(d) list.[11] As provided in 40 C.F.R. § 130.7(b)(4), for each WQLS, states are required to identify the "pollutants causing or expected to cause violations of the applicable water quality standards." Based on new data/ information showing waterbody AUs are impaired for one or more parameters, IDEM has added waterbody AUs to the 2022 Section 303(d) lists (Category 5). Table 5 of Enclosure 3 identifies new waterbody AUs added to Category 5. Table 6 of Enclosure 3 identifies new impairments added to waterbody AUs previously listed in Category 5. In 2022, a total of 34 waterbody AUs with 57 impairments were newly listed in Category 5, and 56 impairments were added to waterbody AUs previously listed in Category 5. EPA considers that IDEM's additions, identified in Tables 5, and 6 of Enclosure 3 are appropriate.

D. IDEM's Waters Subject to Other Pollution Control Requirements Stringent Enough to Implement any Water Quality Standards, 40 C.F.R. § 130.7(b)(1)(iii) Category 4B

Under 40 C.F.R. § 130.7(b)(1), states are not required to list WQLS still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by state or local authority, or other pollution control requirements required by state, local, or federal authority are stringent enough to implement applicable water quality standards. The regulation does not specify the time frame in which these various requirements must meet applicable water quality standards to support a state's decision not to list particular waters.

In keeping with the IR approach as provided by the 2006 IR Guidance, and subsequent IR Memoranda, the State placed waters in Category 4B where other required control measures are expected to result in the attainment of an applicable water quality standard in a reasonable period of time. Indiana listed 9 waterbody AUs and 13 impairments in Category 4B (Table 7 of Enclosure 3).[12] No waterbodies and impairments were removed nor added to Category 4B during the 2022 listing cycle.

IDEM determined that the water quality concerns listed for these segments were due solely to point sources. All of the waterbody AUs identified in Category 4B have some type of enforceable mechanism that will result in attainment of water quality standards for these seven

[11] See Appendix L of the 2022 Indiana IR; and Additions identified under ATTAINS electronic submission.
[12] See Tables 2 and 3 in Appendix D of the 2022 Indiana IR; and Category 4B identified under ATTAINS electronic submission.

waterbody AUs within a reasonable time, and EPA continues to agree these designations are reasonable.

The impairments to the Wabash River and Turtle Creek Reservoir waterbody AUs were attributed to three electric generating facilities discharging to these waters. The facilities in question have NPDES permits for thermal discharge limits based on site-specific standards and have contested IDEM's claims of permit violations based on annual reports which indicated no detrimental effects from their discharges. IDEM determined that an additional study was needed to determine whether the monitoring and reporting requirements under Section 316(a) of the Act, 33 U.S.C. § 1326, were sufficient to ensure the protection of aquatic life in the waters outside of the mixing zone. In December 2005, the U.S. Fish and Wildlife Service, through an Interagency Agreement with IDEM, completed a report entitled, *Evaluation and Assessment of Fish Assemblages Near Electric Generating Facilities: with Emphasis on Review of Discharge Submitted Data, Development of the Standard Operation Procedures, and Traveling Zone Assessment* (Simon, 2005). The objectives of this study were to evaluate the information submitted by the industry for compliance with Section 316(a) requirements; to develop standard methods that would provide industrial contractors specific protocols for use in meeting permit monitoring requirements for their heated effluents; and to conduct traveling zone studies of discharge relationships from selected thermal generating facilities, including two of the three facilities to which the above impairments were attributed. Following completion of the study, IDEM reviewed the results and determined that additional monitoring and reporting requirements are necessary under Section 316(a) to ensure a well- balanced aquatic community in waters outside the mixing zone. In 2006 and 2007, IDEM renewed permits for most electric generating facilities in the State, which included requirements for permittees to submit new Section 316(a) demonstration/variance requests with their NPDES renewal applications. In order to be granted a Section 316(a) variance, these facilities must include a site-specific biological study plan in their request which demonstrates that the variance will not result in biological impairment outside the mixing zone.

IDEM developed a guidance for permittees requesting a 316(a) thermal limits variance in their NPDES permit: "*Guidance for Conducting a Demonstration as a Requirement of a 316(a) Alternative Thermal Effluent Limitation Request".* This document contains the guidance necessary for completing an application for alternative thermal effluent limitations, a Type I, II, or III Demonstration, and sampling and monitoring consistent with associated standard operating procedures. A demonstration for alternative thermal effluent limitations, in accordance with section 316(a) of the CWA and 327 IAC 5-7, should provide IDEM with adequate information to establish alternative thermal effluent limitations that will ensure the protection and propagation of a Balanced, Indigenous Community (BIC) in and on the waters into which a thermal discharge is made. IDEM's guidance document is currently under internal (IDEM/U.S. EPA) review. In the meantime, until IDEM begins full implementation of its approach to issuing 316(a) thermal variances, when NPDES permits with existing 316(a) thermal variances come up for renewal, IDEM is adding year-round alternative thermal limits (if they do not already exist) to the permit until a complete revised 316(a) application can be submitted and evaluated.

The impairments to the Turkey Fork waterbody AUs were attributed to the Picnic Wood

Wastewater Treatment Plant, owned by LMH Utilities Corporation, and are presently being addressed through IDEM's NPDES program. LMH Utilities Corporation completed upgrades to its treatment facility in 2007. The plant continues to have sporadic compliance issues including effluent violations for ammonia in 2015 and a sanitary sewer overflow at the main lift station in 2018 as well as ongoing operational issues. These impairments will remain in Category 4B through the 2022 cycle to allow time for IDEM to conduct the follow-up monitoring necessary to determine if the current biological condition of these waters.

These waters will continue to be monitored, through IDEM's rotating basin monitoring schedule, in order to verify that the water quality standards are attained as expected in a reasonable time frame. In subsequent list submissions, EPA may determine that a segment included in Category 4B should be returned to Category 5 if circumstances have changed such that the State can no longer support its original 4B demonstration, and water quality standards will not be attained in a reasonable time through implementation of the requirements listed in 40 C.F.R. § 130.7(b)(1). Alternatively, if the State later determines that these Category 4B waters are meeting applicable standards when the next Section 303(d) list is developed, it may be consistent with EPA guidance for the State to remove the waters from the Category 4B list at that time and place them into Category 1 or Category 2 as appropriate.

E. IDEM's Waters listed on Category 4C of the Integrated Report (Pollution not Pollutant)

In keeping with the IR approach as provided by the 2006 IR Guidance, and subsequent IR Memoranda, waterbody segments that were identified in the listing cycle as being impaired due to non-pollutant stressors are listed in Category 4C of the IR. Indiana listed 45 waterbody AUs and 47 impairments in Category 4C (Table 8 of Enclosure 3).[13]

The waters identified in Category 4C have a low Index of Biological Integrity (IBI) score which indicates poor biology. However, IDEM has sampled the same locations for chemistry data and has found no violations of the applicable water quality standards nor any other evidence that a pollutant is causing the impairment, and as described below, has identified non-pollutant causes of the impairment. Thus, it is reasonable to surmise that the impaired biology is not caused by a pollutant. There also several listings for dissolved oxygen, which IDEM similarly found are not caused by a pollutant. The non-pollutant pollution sources for these waters fall into the following categories:

a) Channelization, which refers to the straightening of a channel and/or destruction of instream habitat. This source is typically attributed to waters with impaired biotic communities where the chemical data reveals no pollutant loadings that are driving the impairment, and the primary source of the impairment is straightening of the channel and/or the destruction of instream habitat. This source may or may not be associated with continual drain maintenance and is determined on a case-by-case basis at the time assessments are made.

b) Habitat Modification, which refers to destruction or removal of instream habitat (loss of

[13] See Table 4 in Appendix D of the 2022 Indiana IR; and Category 4C identified under ATTAINS electronic submission

riparian habitat) due to activities other than hydromodification. This source is analogous to hydromodification in that it is typically attributed to waters with impaired biotic communities where the chemical data reveal no pollutant loadings that are driving the impairment, and the primary source of the impairment is the destruction of instream habitat. This source is commonly associated with continual drain maintenance.

c) Natural Sources, which refers to naturally intermittent streams with flow regimes such that they cannot achieve oxygenation sufficient to meet Indiana's water quality standards for dissolved oxygen or sustain a healthy aquatic community. This source is typically associated with low dissolved oxygen impairments or impaired biotic communities.

The waters in Category 4C will remain candidates for future monitoring through IDEM's rotating basin monitoring schedule.