

The FINAL 2010 Iowa list of Section 303(d) Impaired Waters

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Summary: Iowa's final 2010 Section 303(d) list of impaired waters contains 474 waterbodies with a total of 628 impairments. This list is Category 5 of Iowa's 2010 Integrated Report. The list includes 384 stream/river segments, 77 lakes, 6 segments of three federal flood control reservoirs, and 7 wetlands. This list is a subset of the 1,200 waterbodies assessed by IDNR staff for support of their designated beneficial uses as described in the [Iowa Water Quality Standards](#) as part of the Clean Water Act Section 305(b) reporting for the 2010 cycle. Impairments are identified for all classes of beneficial uses (primary contact recreation, aquatic life, drinking water, fish consumption, and general uses). The total number of impaired waters in Iowa's 2010 Integrated Report is 606, with 474 waters in Category 5 [impaired and TMDL needed; the Section 303(d) list] and 132 waters in Category 4 [impaired but TMDL not required]. Similar to past listing cycles, the most frequently identified causes of impairment of streams and rivers are indicator bacteria (*E. coli*), biological impairments, and fish kills. For lakes, the most commonly identified impairments are algae, non-algal turbidity, and bacteria (see Figures 1 and 2). All Section 305(b) water quality assessments are available via Iowa DNR's on-line assessment database, [ADNet](#).

Federal Requirements for water quality reporting and impaired waters listing: The Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (CWA)) requires each state to develop a program to monitor the quality of its surface waters (streams, lakes, and wetlands (=waterbodies)). Section 305(b) of the CWA requires states to prepare, every two years, a report that describes, based on the monitoring data available, the status of water quality and the extent to which state waters meet goals of the Act. Section 303(d) of the CWA requires each state, from time to time, to list its waters for which effluent limitations are not sufficient to meet state water quality standards. In [federal regulations for implementing Section 303\(d\)](#), U.S. EPA has defined "from time to time" to mean April 1 of even-numbered years, which coincides with the deadline for Section 305(b) reporting. Beginning with the 2004 water quality reporting cycle, U.S. EPA recommended that states provide a single water quality monitoring and assessment report—the Integrated Report—that combines the water quality reporting requirements of Section 305(b), the impaired waters listing requirements of Section 303(d), and the lakes reporting requirements of Section 314 of the Clean Water Act. This "Integrated Report" is composed of five categories that are designed to give the public and other stakeholders a comprehensive summary of the water quality status in the state (Table 1). According to U.S. EPA's guidelines, water quality problems identified in the Integrated Report should be emphasized and reflected in the state's water quality management plan and annual work programs under Sections 106, 205(j), and 319 of the CWA.

Iowa's Water Quality Monitoring Programs: The current IDNR surface water monitoring network consists of 84 stations mostly on the larger interior rivers with a few stations on larger streams. Sixty of these are ambient stations that are sampled monthly; 24 stations are monitored monthly as part of the upstream-downstream city monitoring. In addition, swimming beaches at approximately 35 state-owned lakes are sampled for indicator bacteria (*E. coli*) weekly from April through October. During the period 2004-2008, 131 Iowa lakes were sampled during summer seasons either by Iowa State University or by the State Hygienic Laboratory (SHL) as part of the IDNR-sponsored statewide lake monitoring program. Approximately 70 stations on smaller rivers and streams are sampled yearly for fish and macroinvertebrates as part of biological monitoring conducted for the IDNR/SHL stream biocriteria project, the regional environmental monitoring and assessment program (REMAP), and TMDL-related monitoring. In cooperation with U.S. EPA (Region 7), IDNR conducts annual monitoring of toxic contaminants in fish from Iowa's rivers and lakes as part of the Regional Ambient Fish Tissue (RAFT) monitoring program. Iowa DNR also uses data from monitoring networks operated by the Corps of Engineers, U.S. Geological Survey, and municipal water utilities (e.g., Des Moines, Cedar Rapids, and the Rathbun Rural Water Association). Results of fish kill investigations are also used to develop water quality assessments and to identify impairments.

Qualifiers: The list of impaired waters is only as inclusive as the various water quality (WQ) monitoring networks in Iowa. In general, the greater the amount of monitoring, the greater the number of waters on the list. Iowa does not yet have numeric WQ criteria for nutrients, chlorophyll, turbidity or siltation; any such impacts identified are based on violations of the state's narrative standards protecting against "aesthetically objectionable conditions." Eventual adoption of numeric criteria for nutrients, chlorophyll, and/or turbidity will likely result in a substantial increase the number of waterbodies on Iowa's future lists of impaired waters.

Perspective on the meaning of "impairment": General characterizations of Iowa's Section 303(d)-listed waters such as "polluted", "seriously polluted", and/or "severely polluted" are misstatements that reflect a lack of understanding of what the concepts of "pollution" and "impairment" mean and what state water quality standards are designed to do. Although severe water quality problems do continue to occur in Iowa, they are fortunately rare. Most of the impairments on Iowa's lists of impaired waters do not indicate severely or grossly—or even moderately—polluted conditions. The difference between assessing a waterbody as "impaired" versus "fully supported" can come down to contaminant levels in only one of 36 monthly water quality samples or the absence of a few key aquatic species in a stream. State quality criteria and assessment methods are designed to identify water quality problems before the point that anything approaching "serious" or "severe" pollution occurs and are sufficiently protective so that water quality conditions don't have to reach the "seriously polluted" stage before a problem is identified. Most of Iowa's impairments (approximately 75%) tend toward the "slight" to "moderate" ends of the scale. At the slight to moderate levels, these impairments typically do not interfere or preclude the beneficial uses from occurring: people can still swim safely in the water and catch the desired sport fish, and biological diversity can remain quite high. Although high levels of indicator bacteria do occur and suggest "impairment" and potential risks to persons that use rivers and lakes for swimming, reports of waterborne illness related to swimming-type uses of Iowa's rivers and lakes have historically been extremely rare and largely anecdotal.

Why does the number of impaired waters in Iowa continue to increase? A state's Section 303(d) list of impaired waters is largely an accumulation of impairments identified in past listing cycles. Once added to a state list, the impairment is likely to remain on the list. In general, impairments are identified faster than impairments are removed through the TMDL process. Thus, the number of waters on state lists tend to increase over time. Also, as more state waters are monitored over time, the number of impairments continues to increase. U.S. EPA carefully scrutinizes any state proposal to remove an impairment from a Section 303(d) list. According to [U.S. EPA regulations](#), impairments can only be removed from a state list for specific reasons, including (1) more recent data showing that the impairment no longer exists, (2) discovery of an error in the data or rationale for the original listing, and (3) preparation and approval of a total maximum daily load (TMDL) that identifies sources of pollutant loadings and reductions in loadings necessary to fully attain applicable water quality standards. A primary mechanism for removing waters from Iowa's list of impaired waters has been preparation and U.S. EPA approval of TMDLs. Category 4a of Iowa's 2010 Integrated Report consists of 96 waterbodies that were previously on Iowa's lists of impaired waters (IR Category 5) but that now have TMDLs approved for their impairments (Table 2). Also, many impairments (for example, those due to bacteria and many biological impairments) are due to nonpoint sources of pollution.

Why is the number of impaired on the 2010 list similar to that on the 2008 list? The number of impaired waters on Iowa's final 2010 Section 303(d) list (474) is only slightly (~9%) larger than the number on Iowa's final/approved 2008 list (435). This similarity is due primarily to the lack of any significant changes to the *Iowa Water Quality Standards* or monitoring networks over the last few years that would impact the Section 303(d) listing process. Although 113 new impairments were identified for the 2010 cycle, 73 impairments were removed (de-listed) due to new data, preparation of TMDLs, receiving restitution for fish kills, and previous assessment errors. Review of recent (2006-08) monitoring data for Iowa's surface waters suggests neither improvements nor declines in the status of water quality statewide. Table 3 presents a brief summary of the impairment status of the streams, river, and lakes assessed for Iowa's 2010 Integrated Reporting cycle.

The Integrated Report Format

As specified in [U.S. EPA's guidelines](#) for the 2010 water quality reporting and impaired waters listing cycle, the integrated report consists of five categories described in Table 1.

| | |
|-------------|---|
| Category 1: | All designated uses are met |
| Category 2: | Some of the designated uses are met, but there are insufficient data to determine if the remaining designated uses are met. |
| Category 3: | Insufficient data to determine whether any designated uses are met. |
| Category 4: | Waterbody is impaired or threatened but a TMDL is not needed. |
| Category 5: | Waterbody is impaired or threatened and a TMDL is needed. |

In their guidance to states, U.S. EPA has added the following Integrated Report subcategories:

- *4a: all TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA.*
- *4b: other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time;*
- *4c: the impairment or threat is not caused by a pollutant.*

The U.S. EPA guidelines allow states to create additional subcategories in order to refine the reporting process. In order to better track the attainment status of Iowa waterbodies, the following subcategories have been created by IDNR:

- Category 2b: At least one use is met with at least one other use potentially impaired.
- Category 3b: Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired.
- Category 4d: Waterbody assessed as "impaired" due to a fish kill where enforcement action was taken to address the source of the kill: no TMDL required.
- Category 5b: Impairment is based on results of a fish kill investigation or biological monitoring where specific causes and/or sources of the impairment have not yet been identified.
- Category 5p: A presumptively-applied use is impaired (most often applied to bacterial impairments of the presumptively applied Class A1 (primary contact recreation) use). This subcategory was new for Iowa's 2008 Integrated Reporting cycle.

Iowa's List of Waters in Need of Further Investigation:

The list of waters in need of further investigation (WINOFI), as required by Iowa's "credible data law", is comprised of those waterbodies assessed (evaluated) as "potentially impaired" and placed in IR subcategories 2b and 3b. As stated in the rationales for subcategories 2b and 3b above, the assessments of any impairments in these waterbodies are based on less than complete information that suggests a potential impairment. Thus, the assessments are of relatively low confidence and are not appropriate for addition to Iowa's impaired waters list. Iowa's final 2010 list of waters in need of further investigation contains 253 waterbodies. Of the 220 waterbodies on the final 2008 WINOFI list, a total of 11 waterbodies were moved to other categories of the integrated report as follow:

- TMDLs were prepared for two waters, and these waters were placed in Category 4a;
- Nine waterbodies were assessed as "impaired" and in need of a TMDL and were placed in Category 5 (=Section 303(d) list).

Table 2. Summary of the number of waterbodies in each category of Iowa's final 2010 integrated Section 305(b) / Section 303(d) report. The 467 waterbodies in Categories 5a, 5b, and 5p comprise Iowa's final 2010 Section 303(d) list; the 254 waterbodies in Categories 2b and 3b comprise Iowa's 2010 list of waters in need of further investigation.

| Integrated Report Category | Category Description | Number of Waterbodies |
|----------------------------|---|-----------------------|
| 1 | All designated uses met. | 9 |
| 2a | Some designated uses met; insufficient data to determine whether other uses are met. | 350 |
| 2b | At least one designated use is met with at least one other use potentially impaired based on an "evaluated" assessment. | 25 |
| 3a | Insufficient data to determine whether any designated uses are met. | 1029 |
| 3b | Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired based on an "evaluated" assessment. | 228 |
| 4a | All TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA. | 96 |
| 4b | Other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time; TMDL not required. | 0 |
| 4c | The impairment or threat is not caused by a pollutant; TMDL not required. | 29 |
| 4d | Waterbody assessed as "impaired" due to a fish kill where enforcement action was taken to address the source of the kill: TMDL not required. | 39 |
| 5a | Waterbody is impaired or threatened and a TMDL is needed. | 205 |
| 5b | Impairment is based on results of biological monitoring or a fish kill investigation where specific causes and/or sources of the impairment have not yet been identified. | 181 |
| 5p | A presumptively applied use is impaired. | 88 |

Table 3. Summary of the assessed lake and stream/river waterbodies for Iowa's final 2010 305(b)/303(d) cycle according to general water quality condition (good, potentially impaired, impaired). Note: each assessed waterbody may have more than one impairment.

| Waterbody Type | Number of WB assessed: | Good water quality: Categories 1 & 2a: | Potentially impaired: Categories 2b and 3b (WINOFI): | Impaired: Categories 4 & 5: |
|------------------------------------|------------------------|--|--|-----------------------------|
| Streams and Rivers | 890 | 224 (25%) | 196 (22%) | 470 (53%) |
| Lakes and Flood Control reservoirs | 195 | 62 (31%) | 15 (8%) | 118 (61%) |

Web links:

EPA guidelines for 2010 Integrated Reporting :

http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/oa_memo_nov2010.cfm .

ADBNet: Iowa's Section 305(b) assessment database: <http://programs.iowadnr.gov/adbnnet/index.aspx>.

Iowa Water Quality Standards: <http://www.iowadnr.com/water/standards/files/chapter61.pdf>.

Figure 1. Causes of impairment in Iowa rivers and streams in Categories 4 and 5 of Iowa's final 2010 Integrated Report. Numbers of impairments do not necessarily reflect the statewide impact of any given pollutant or cause of impairment.

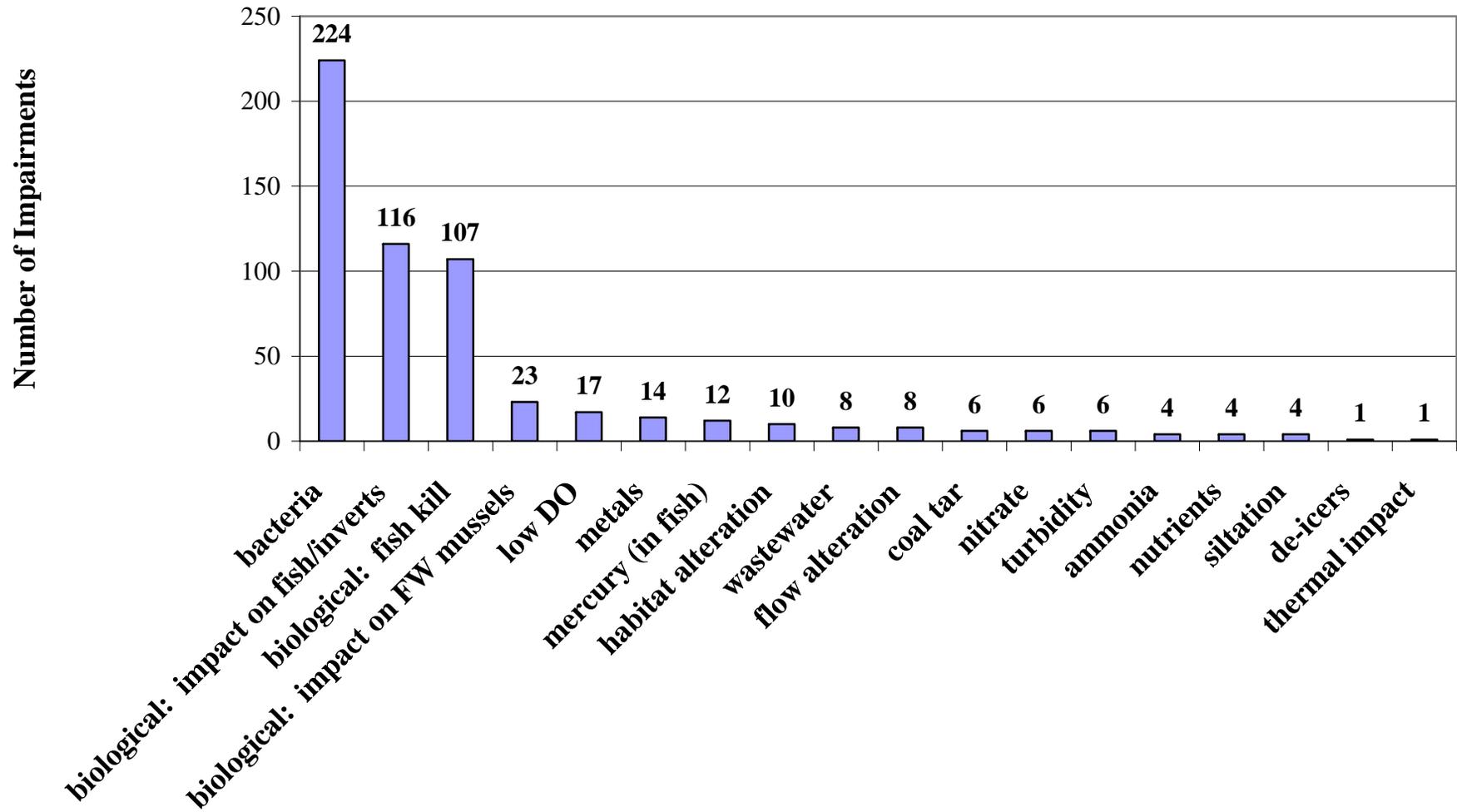


Figure 2. Causes of impairment in Iowa lakes in Categories 4 and 5 of Iowa's final 2010 Integrated Report. Numbers of impairments do not necessarily reflect the statewide impact of any given pollutant or cause of impairment.

