Iowa Environmental Council

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October 15, 2025

Marie Todey
Iowa Department of Natural Resources
6200 Park Ave
Des Moines IA 50321
Email: wqs@dnr.iowa.gov

RE: Comments on IDNR's 2025 Triennial Review of Water Quality Standards

Dear Ms. Todey:

On behalf of the nine undersigned organizations, we write to provide joint comments on the triennial review of water quality standards being conducted by the Iowa Department of Natural Resources ("IDNR").

This triennial review provides an opportunity to lead in protecting Iowans' health at a time when people across the state are concerned about our rising cancer rates and other environmental health risks. We encourage IDNR to prioritize adoption of water quality standards that will protect human health.

We request IDNR include the following in its work plan for adoption of water quality standards in the next three years:

1. EPA's recommended human health criteria
2. Lake numeric nutrient criteria
3. River numeric nutrient criteria
4. Microcystin criteria for recreation and drinking water
5. PFAS criteria for human health

In addition, we provide comments on other topics identified by IDNR in its agenda and presentation for public hearings held on September 18 and September 23, 2025. On these topics, we request the following:

1. Retain antidegradation protections for waters meeting standards.
2. Account for tribal reserved rights where appropriate.
3. Ensure use attainability analyses results in waters attaining their highest use.

We appreciate IDNR's efforts to modernize the state's water quality standards. Ensuring the standards reflect current science and uses of the water will advance the goals of the Clean Water Act to restore and protect lakes, rivers, and streams across the state. Thank you for holding public hearings and considering our comments.

Sincerely,

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Josh Mandelbaum
Senior Attorney
Environmental Law & Policy Center

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Environmental Working Group

Dani Replogle
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JOINT COMMENTS OF ENVIRONMENTAL AND CONSERVATION ORGANIZATIONS

I. IDNR Should Prioritize EPA-Recommended Criteria for a Range of Pollutants Affecting Human Health.

The Clean Water Act created the triennial review of water quality standards to ensure states adopt standards that reflect current science and incorporate new developments.[1] Part of the state obligation in this process is to incorporate new EPA-recommended criteria unless the state has reason not to adopt them.[2]

EPA has adopted numerous recommended criteria that IDNR has not yet acted on. These criteria cover a range of water uses and pollutants with chronic effects on human health and aquatic life, including human health criteria, lake numeric nutrient criteria, microcystins, and PFAS. As IDNR considers those criteria for its upcoming three-year work plan, it is clear that Iowans need greater protection from environmental risk factors affecting human health.

Iowans face water quality problems similar to people in many other states, though sometimes on a greater scale, and the scientific basis for EPA's criteria apply equally in Iowa as elsewhere. We expect IDNR to add all of EPA's criteria to its workplan for adoption in the near future because we can see no rational basis for delaying protections for Iowans' health.

We recognize IDNR has limited resources and must prioritize which criteria to implement. With that in mind, we recommend prioritizing human health criteria to help address environmental risk factors contributing to Iowa's high and rising cancer rates. IDNR needs to ensure that our water quality criteria protect against water pollution that may be contributing to Iowa's high cancer rates, ranging from pesticides to industrial chemicals to PFAS to nitrate.

II. IDNR Must Adopt and Update Human Health Criteria to Protect Iowans' Health.

Iowa has the second-highest cancer rate in the country and is one of few states where the rate is increasing. We are concerned that environmental factors, including water quality, play a role in that. Iowans are very concerned about water quality and industrial pollution contributing to chronic health effects such as cancer, as identified in a survey conducted through cancer listening sessions held by IEC, the Harkin Institute at Drake University, and the Iowa Farmers Union, and across Iowa in 2025.[3] As a state, we should not sacrifice Iowans' health for the benefit of industrial polluters.

EPA adopts human health criteria for a range of industrial, agricultural, and other pollutants after a lengthy scientific review process. The scientific review ensures that the recommendations are

[1] 33 U.S.C. § 1313(c)

[2] 40 C.F.R. § 131.20(a).

[3] IEC compiled results of surveys at listening sessions around the state asking about levels of concern for environmental risk factors for cancer. The results will be incorporated into a forthcoming report.

tied to human health outcomes that have been well established by scientific studies. EPA's supporting documentation provides adequate basis to justify adoption of its standards unless IDNR has state-specific information to justify a different approach.

It is shocking that the majority of EPA human health criteria, which EPA sets to protect against chronic health problems like cancer, have not been adopted in the state. IDNR provided the following information about EPA's 2015 updated health criteria in its public hearings on the triennial review.

Table 1. Human Health Criteria Comparison.

EPA Criteria	Water + organism	Organism only
New	54	56
More stringent	26	24
Less stringent	14	14
Same	0	0
Total	94	94

EPA's online listing of human health criteria includes 125 pollutants.[4] Iowa's rule listing water quality criteria protecting human health contains less than half of these, not all of which are the same as the criteria set by EPA, as shown in the attached Appendix A.[5] In some cases IDNR has criteria for variants of the chemicals, or for families of chemicals but not individual ones. Still, based on analysis by both IDNR and in the appendix, the state needs to make substantial updates to the human health criteria.

The discrepancies between EPA's human health criteria and Iowa criteria result from IDNR not updating the state's human health criteria since the 2002 update to EPA's recommended human health criteria. Even before EPA's update in 2015, Iowa lacked criteria for numerous pollutants for which EPA set criteria.[6] The state water quality standards are more than two decades old and a decade overdue for updates.

DNR needs to adopt criteria that ensure protection of human health, including those criteria adopted by EPA that the state has not yet adopted.

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[4] "National Recommended Water Quality Criteria - Human Health Criteria Table," U.S. EPA (Dec. 19, 2024), *available at* https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table (last visited Oct. 7, 2025).

[5] *See* IOWA ADMIN. CODE r. 567-61.3(3) at Table 1.

[6] "Analysis of the Numeric Water Quality Criteria Adopted by the Ten States That Border Directly on the Mississippi River: Iowa," Environmental Law Institute (Nov. 2009) at 25, *available at* https://www.eli.org/sites/default/files/eli-pubs/d18-21-ia.pdf (identifying that Iowa had not adopted fish and water criteria for 60 of 113 pollutants, and had not adopted water supply criteria for 53 of 84 toxic pollutants with primary drinking water standards).

III. IDNR Must Adopt Lake Numeric Nutrient Criteria.

Nutrients causing algae blooms have been a longstanding concern for Iowans and IDNR. Despite efforts by the state and stakeholder groups, including a rulemaking effort, comments on triennial reviews,[7] and petitions for rulemaking,[8] Iowa still lacks numeric criteria for nutrients in lakes. Meanwhile, other states have managed to adopt criteria for both lakes and rivers, including many of Iowa's neighbors.[9] Some of these states have criteria for specific ecological regions that overlap with Iowa's own regions.[10]

After years without criteria, EPA issued recommended criteria in 2021 that used Iowa as a case study for criteria.[11] At this point, IDNR must adopt numeric nutrient criteria to address the consistent nutrient problems that have plagued Iowa's lakes. These nutrient criteria are foundational for further action on addressing our nutrient issues.

For the reasons described below, we request IDNR to include adoption of numeric criteria lakes as a priority for this triennial review.

A. Background

Iowa has a long history of efforts to adopt numeric nutrient criteria for lakes and reservoirs. In 1998, EPA set a goal that all states adopt numeric standards by the end of 2003.[12] Although Iowa, like many other states in the region, did not meet the deadline, IDNR finalized its criteria

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[7] "Triennial Review Comments," IEC & ELPC (Oct. 15, 2014); "IEC Comments on 2018-2020 Triennial Review, Part I: Numeric Nutrient Criteria," at 1, *available at* https://www.iaenvironment.org/webres/File/IEC%20TR%20Comments%2C%20Part%20I.pdf; "Triennial Review Comments," IEC & ELPC (June 30, 2021), available at https://www.iaenvironment.org/webres/File/Triennial%20Review%20letter%20to%20DNR%20re%20NNC.pdf.

[8] "Petition by the Iowa Environmental Council and the Environmental Law and Policy Center for the adoption of rules relating to numeric water quality standards for significant public recreational lakes," ELPC & IEC (Aug. 20, 2013), *available at* https://www.iaenvironment.org/webres/File/News%20%26%20Resources/Comments/Petition_for_Numeric_Water_Quality_Standards_for_Lakes.pdf; "Petition by the Iowa Environmental Council and the Environmental Law and Policy Center for the adoption of rules relating to numeric water quality standards for significant public recreational lakes," ELPC & IEC (Nov. 1, 2018), *available at* https://www.iaenvironment.org/webres/File/Petition%20for%20Rulemaking_ELPC%20and%20IEC_11_1_18(1).pdf.

[9] "State Progress Toward Adopting Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus," U.S. EPA, *available at* https://www.epa.gov/nutrientpollution/state-progress-toward-adopting-numeric-nutrient-water-quality-criteria-nitrogen (last accessed Oct. 7, 2025).

[10] MINN. R. 7050.0222 (2025) (setting criteria for the Western Corn Belt Plains).

[11] "Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs," U.S. EPA, 86 Fed. Reg. 44,712 (Aug. 13, 2021) (formally announcing criteria); *see* "Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs," EPA (Aug. 2021), available at https://www.epa.gov/system/files/documents/2021-08/nutrient-lakes-reservoirs-report-final.pdf (providing criteria).

[12] US EPA. *National Strategy for the Development of Regional Nutrient Criteria*. "EPA expects all States and Tribes to adopt and implement numerical nutrient criteria into their water quality standards by Dec. 31, 2003." 63 Fed. Reg. 34648 (June 25, 1998), at 34649.

development plan in 2006, stating that numeric criteria for lakes would be adopted in 2007, with stream criteria being developed the following year.[13]

In 2007, the IDNR tasked the Nutrient Science Advisors with recommending nutrient water quality criteria for Iowa Waters. The Advisors recommended criteria, but the state failed to adopt them. IDNR made significant progress through two IDNR-led initiatives towards establishing numeric nutrient criteria for certain classes of lakes, reservoirs and streams between 2009-2013, including a rulemaking process that expired in 2011. However, in recent years, IDNR has backtracked on these efforts.

Following the stalled rulemaking process, IEC twice petitioned for adoption of these rules after the state's effort to adopt the criteria as rules ended, but the state Environmental Protection Commission denied both petitions. IDNR's web page tracking progress on the criteria development plan was taken down before the previous triennial review process.[14]

In addition to petitions, IEC has repeatedly requested IDNR to adopt numeric nutrient criteria through the triennial review process.[15] IDNR has pointed to the Nutrient Reduction Strategy as the state's policy to address nutrients. But the Nutrient Reduction Strategy does not set water quality standards and cannot substitute for adoption of appropriate water quality standards. As IEC has shown, progress on the voluntary measures in the Nutrient Reduction Strategy is not at the appropriate pace and scale to meet nutrient reduction targets, and a different approach is necessary to protect Iowa's waters.[16]

More recently, EPA's adoption of recommended lake numeric nutrient criteria numeric nutrient criteria creates a legal obligation for IDNR to adopt the criteria. IDNR's past rationale for delay does not provide justification for refusing to do so.

Establishing water quality standards for nutrients must be a part of IDNR's work plan for the next triennial review period. As a starting point, IDNR should initiate rulemaking to adopt the recommended nutrient criteria already developed.

B. IDNR Has a Legal Duty to Adopt EPA's Recommended Numeric Nutrient Criteria.

As discussed above in section I, IDNR has a legal obligation to adopt EPA's recommended criteria under Clean Water Act 304(a) or provide justification for not doing so. The severity of Iowa's water quality problems and the slow pace of implementation of practices identified in the Nutrient Reduction Strategy dictate that IDNR finally proceed to adopt lake numeric nutrient criteria.

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[13] IDNR. *Iowa's Plan for Adoption of Nutrient Water Quality Standards 3rd Draft—2/3/06.*

[14] *See* Clare Kernek, "IEC Comments on 2018-2020 Triennial Review, Part I: Numeric Nutrient Criteria," at 1, *available at* https://www.iaenvironment.org/webres/File/IEC%20TR%20Comments%2C%20Part%20I.pdf.

[15] *See id.*; Ingrid Gronstal et al., "Triennial Review Comments" (June 30, 2021), available at https://www.iaenvironment.org/webres/File/Triennial%20Review%20letter%20to%20DNR%20re%20NNC.pdf.

[16] *See* "The Slow Reality of the NRS," Iowa Environmental Council (2019); "The Iowa Nutrient Reduction Strategy: Ten Years and No Progress," IEC (2022), available at https://www.iaenvironment.org/webres/File/NRS%20Report%20and%20Recommendations%202022.pdf..

EPA's final lake numeric nutrient criteria provide a sound scientific basis for adoption of criteria in Iowa. EPA considered implementation challenges from numerous states that have now adopted lake numeric nutrient criteria. It considered the scientific challenges in setting a numeric threshold in different circumstances that can result in different recreational conditions. The criteria ultimately address key scientific and practical challenges to adopting lake numeric nutrient criteria.

Furthermore, Iowa was selected as a case study by the EPA to test new nutrient models because of the Nutrient Reduction Strategy goal to continue assessing and developing suitable nutrient criteria.[17] The results of the case study provide a scientific basis for Iowa to adopt numeric criteria. We recommend the IDNR use these data to develop numeric nutrient criteria in the coming years.

Despite IDNR's partnership with the EPA and the explicit Nutrient Reduction Strategy long-term goal to develop criteria, the IDNR has not committed to any action. In the IDNR's Public Participation Responsiveness Summary for Iowa's 2020 Section 303(d) List of Impaired Waters, the only response the IDNR provided regarding lake numeric nutrient criteria was to state: "the IDNR will review the recommended criteria to decide on further future action on the subject."[18] When asked multiple times at the stakeholder meeting for that triennial review why IDNR was not including numeric nutrient criteria in the draft triennial review plan, the IDNR merely said it supported the Nutrient Reduction Strategy. Iowans need a commitment from the IDNR on numeric nutrient water quality criteria to protect waterway and ecosystem health, public health, and economic prosperity.

C. Nutrients are causing serious impairments of beneficial uses in Iowa waters.

The harmful effects of nutrient pollution are well known. As the Nutrient Reduction Strategy explains, while nitrogen and phosphorus are natural parts of aquatic ecosystems, "at excessive levels these nutrients can lead to water quality problems and interfere with beneficial uses."[19] Studies of nutrient pollution by EPA and numerous other entities have demonstrated that excess nutrients cause large growths of algae called algal blooms, resulting in reduced spawning grounds and nursery habitats for aquatic organisms and even fish kills caused by severely reduced oxygen in the water. Certain types of algal blooms, known as harmful algal blooms, generate toxins and elevated bacteria levels that can make people and animals sick if they come into contact with polluted water, or consume fish or water contaminated with these harmful

[17] *See* "Notice of National Strategy for the Development of Regional Nutrient Criteria," 63 Fed. Reg. 34648 (June 25, 1998) (stating EPA will develop case studies); "Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs," EPA (Aug. 2021), available at https://www.epa.gov/system/files/documents/2021-08/nutrient-lakes-reservoirs-report-final.pdf.

[18] *Iowa 2020 Section 303(d) list: Responsiveness Summary*, at p. 13 (2021).

[19] IDNR et al., *Iowa Nutrient Reduction Strategy* (Updated Feb. 2025) Section 1.2 at 11, *available at* https://www.nutrientstrategy.iastate.edu/sites/default/files/documents/2025%20INRS%20Complete%20Feb%202025.pdf.

pollutants.[20] In addition to these problems, nitrate pollution in surface and groundwater used as drinking water sources can be harmful even at low levels.[21] According to a report from the Center for Rural Development at Iowa State University, the costs to Iowans from nutrient pollution—from nitrate removal costs for drinking water sources (both public and private), lost recreation benefits, and adverse human health impacts—are significant.[22]

Impacts from nutrient pollution are particularly acute at Iowa's recreational lakes, where excess nitrogen and phosphorus can produce unsightly algal blooms and reduced water clarity. Blue-green algae blooms are of particular concern in Iowa lakes. When conditions are right (excess nutrients in warm, slow-moving waters), these blooms can form within a few days, quickly turning clear water scummy and foul-smelling.

In addition to the problem of an increasing incidence of harmful algae blooms in Iowa waters, the overall trend for impairments of beneficial uses caused by nutrient pollution is also increasing. For example, Iowa's 2012 Integrated Report identified a total of 62 impairments of beneficial uses (such as primary contact recreation) due to Algal Growth in lakes, reservoirs and wetlands.[23] In the most recent 2024 Integrated Report, that number has grown to 68.[24] Although IDNR does not assess waters for impairments based on concentration of nutrients found in the water (because Iowa has no numeric nutrient standards), as the 2024 Integrated Report Methodology explains, the biomass of algae in lake water "reflects a lake's nutrient condition."[25]

D. Iowa needs water quality standards that address the causes of impairments, not just the effects.

Iowa's numeric water quality criteria are the primary basis for identifying impairments (e.g., numeric thresholds for E.coli bacteria in recreational waters) and are designed to be *protective* of the beneficial uses designated for Iowa's streams, rivers, and lakes. As IDNR explains, these criteria are set to warn of potential quality problems well before anything approaching "grossly polluted conditions" occurs.

In contrast, "Impairments based on violations of Iowa's narrative water quality standards, however, tend to be more severe."[26] Because Iowa lacks protective numeric criteria for nutrients that address the causes of harmful algal blooms, waters are targeted for reduced loading only

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[20] *See generally*, U.S. EPA, "Basic Information on Nutrient Pollution," available at https://www.epa.gov/nutrientpollution/basic-information-nutrient-pollution (last accessed Oct. 10, 2025).
[21] *See* Iowa Environmental Council, *Nitrate in Drinking Water: A Public Health Concern for All Iowans* (May 2024), *available at* https://www.iaenvironment.org/webres/File/IEC_Nitrate_in_Drinking_Water_2024FINAL.pdf.
[22] Chuan Tang et al. Center for Agricultural and Rural Development, Iowa State University. Report. *Economic Benefits of Nitrogen Reductions in Iowa* (Feb. 2018), *available at* https://www.card.iastate.edu/products/publications/texts/water-quality-report.pdf.
[23] IDNR, *Fact Sheet for the final 2012 list of impaired waters*, at 7.
[24] IDNR, "2024 305(b) Assessment Summary: Summary Statistics," *available at* https://programs.iowadnr.gov/adbnet/Assessments/Summary/2024 (last accessed Oct. 8, 2025).
[25] IDNR, "Methodology for Iowa's 2024 Water Quality Assessment, Listing, and Reporting Pursuant to Sections 305(b), 303(d), and 314 of the Federal Clean Water Act" (Sept. 29, 2023), at 25.
[26] *Id.*

when serious problems such as "aesthetically objectionable conditions" and "nuisance aquatic life" (i.e., narrative standard violations) have already developed, making restoration more difficult. IDNR has used a trophic state index as a surrogate for identifying waters that exceed the narrative standard.[27] This approach has not been adopted into rule and does not replace water quality criteria.

Studies of lake restorations demonstrate that lakes can often maintain clear conditions despite significant nutrient loading, in part due to underwater plants that help maintain clarity in healthy lakes, enhancing their own growing conditions.[28] However, once a eutrophic lake does "flip" from clear to turbid—a change that can occur abruptly—the underwater vegetation dies off, beginning a self-perpetuating cycle that makes restoration difficult to achieve through reductions in nutrient loading alone.[29] Restoring such a lake to its unimpaired condition is an expensive and long-term proposition.

In contrast to this reactive approach, numeric criteria would enable IDNR and its partners to prevent severe water quality problems caused by nutrient pollution. For point source dischargers, permit limits for nitrogen and phosphorus would meet a standard that has been established to be protective of downstream waterbodies. For non-point sources, watershed-based planning under IDNR's TMDL program would begin at an earlier stage of impairment to identify the contributing sources and necessary reductions that will prevent a more severe impairment such as a chronic algae problem from taking hold. This planning can guide local watershed groups and other partners in implementing voluntary reductions, using the funding that becomes available for such projects through federal and state cost-sharing, EPA grants for urban and non-urban watershed restoration projects, and access to the funding under Iowa's Water Quality Initiative in support of the Nutrient Reduction Strategy. Although assessing waters based on numeric criteria rather than violations of narrative standards will result in more waters being assessed as impaired in the short term, these less severe impairments can be addressed more quickly and at less cost by making information, planning and funding available to communities at a point when reductions in nutrient loading will be most effective.

E. Iowa's Nutrient Reduction Strategy Does Not Substitute for Waterbody-Specific Standards.

Under the Clean Water Act, states are required to develop water quality standards for their waters that protect the public health or welfare, enhance the quality of the water, and serve the purposes of the Act.[30] The Iowa Nutrient Reduction Strategy's goal of statewide reductions in total nitrogen and total phosphorus loads reaching the Mississippi River[31] is not a substitute for

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[27] *Id.* at 24-25.

[28] Marten Scheffer et al., *Catastrophic shifts in ecosystems (review article)*, 413 Nature 591, 592 (2001).

[29] *Id.; see also* Joy M. Ramstack Hobbs et al., *The legacy of large regime shifts in shallow lakes*, 0(0) Ecological Applications 1 (2016).

[30] CWA § 303(c)(2)(A), *codified at* 33 U.S.C. § 1313(c)(2)(A).

[31] IDNR et al., *Iowa Nutrient Reduction Strategy* (Updated Feb. 2025) at 6, *available at* https://www.nutrientstrategy.iastate.edu/sites/default/files/documents/2025%20INRS%20Complete%20Feb%202025.pdf.

waterbody-specific standards, which is why it is an insufficient and ineffective approach for addressing the problems of nutrient pollution *in Iowa*.

Water quality standards define water quality goals for individual water bodies by taking into account their uses by Iowans, in addition to protecting downstream uses. The Clean Water Act provides that when states revise or adopt new water standards, "[s]uch standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes…." CWA § 303(c)(2)(A).

A nutrient strategy without nutrient standards is incomplete. The EPA framework for state nutrient reduction strategies referred to above is contained in a 2011 memo that, while recognizing the need for flexibility among various states' approaches, nevertheless includes "certain minimum building blocks" that EPA believes are "necessary for effective programs to manage nitrogen and phosphorus pollution."[32] One of these critical components is ***numeric nutrient criteria***: "It has long been EPA's position that numeric nutrient criteria targeted at different categories of water bodies and informed by scientific understanding of the relationship between nutrient loading and water quality impairment are ultimately necessary for effective state programs."[33] The recommended eight elements for state strategies include: "Develop work plan and schedule for numeric criteria development."[34] As explained above, IDNR did establish such a work plan in 2006. Although recommended nutrient criteria for recreational lakes and certain classes of streams have been developed, IDNR has never adopted these criteria into Iowa's water quality standards. The stream nutrient technical advisory committee (TAC) formed by IDNR has been disbanded.

Iowa's Nutrient Reduction Strategy does address the issue of water quality standards for nutrients in Section 1, where the "Policy Considerations" of the strategy are discussed. The Nutrient Reduction Strategy questions the feasibility and usefulness of numeric nutrient criteria, concluding that due to the many difficulties involved, "legitimate concerns about the value of numeric nutrient criteria have been raised."[35] The Nutrient Reduction Strategy only cites an EPA document from 2000, ignoring the decades of action on nutrient standards since then. The statements in the Nutrient Reduction Strategy purporting to explain the obstacles to developing and implementing nutrient criteria are inaccurate and/or based on out-of-date information. Other criticisms of numeric nutrient criteria are unfounded.[36] Indeed, the statements questioning nutrient criteria in the Nutrient Reduction Strategy, which have not been updated since their

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[32] Nancy Stoner, U.S. EPA, *Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (March 16, 2011), at 2. Hereinafter, Stoner Memo.

[33] Stoner Memo at 2-3.

[34] Stoner Memo, "Recommended Elements of a State Framework for Managing Nitrogen and Phosphorus Pollution," at 2.

[35] IDNR et al., *Nutrient Reduction Strategy* (Updated Feb. 2025), Section 1.2, at 14, *available at* https://www.nutrientstrategy.iastate.edu/sites/default/files/documents/2025%20INRS%20Complete%20Feb%202025.pdf.

[36] *See* "IEC Comments on 2018-2020 Triennial Review, Part I: Numeric Nutrient Criteria," at 4-7, *available at* https://www.iaenvironment.org/webres/File/IEC%20TR%20Comments%2C%20Part%20I.pdf (refuting statements questioning numeric nutrient criteria in the Nutrient Reduction Strategy).

inclusion in the 2012 version, do not reflect the fact that recommended numeric nutrient criteria have *already been developed* for waterbodies in Iowa.

While other states are finding innovative technological and regulatory solutions to the problem of nutrient pollution, Iowa's continued reliance on its outdated and incomplete Nutrient Reduction Strategy is meeting with only minimal progress in practice adoption, despite the significant costs and efforts expended to implement its mostly voluntary approach. Water quality – the ultimate measure of progress toward the 45 percent reduction goal – has not measurably improved in the time since the state developed the Nutrient Reduction Strategy.

IDNR should avoid further delay in implementing the nutrient standards already developed for warm water wadeable streams and recreational lakes. Iowans risk losing the benefits of the significant time and expertise invested in the important progress made towards addressing Iowa's serious water quality problems caused by nutrient pollution. Further, IDNR should commit to a workplan as part this triennial review to develop numeric nutrient criteria for all designated uses in all classes of Iowa waters.

IV. IDNR Should Adopt Criteria for Microcystins to Protect Drinking Water and Recreation Uses.

Excess nutrient pollution can threaten the health of recreational users by promoting the growth of cyanobacteria species that produce microcystins.[37] Iowa lakes have suffered from numerous advisories of unsafe swimming each year due to persistent harmful algae blooms that produce microcystins.[38] These high concentrations of microcystins have limited recreational uses and threaten drinking water. IDNR needs to adopt water quality criteria to protect the designated uses of waters across the state.

A. Microcystins pose a threat to human health through recreational exposures.

EPA evaluated studies of the health effects resulting from exposure to microcystin to determine its recommended criterion.[39] Microcystins are produced by cyanobacteria, which are also known as blue-green algae. Microcystins can cause rashes, hives, abdominal pain, headache, sore throat, vomiting and nausea, dry cough, diarrhea, blistering around the mouth, pneumonia, and, at high

[37] *See* Iowa Department of Public Health, "Microcystin," available at https://hhs.iowa.gov/health-prevention/providers-professionals/center-acute-disease-epidemiology/epi-manual/environmental-disease/microcystin (last accessed Oct. 10, 2025).
[38] "Beach Monitoring: Safe to Swim?," Iowa Environmental Council, *available at* https://www.iaenvironment.org/our-work/clean-water-and-land-stewardship/swimming-advisories (last accessed Oct. 3, 2025).
[39] *See Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019).

levels, liver damage.[40] Microcystins have also caused liver toxicity in lab testing.[41] Exposure to microcystin in drinking water can cause liver damage in humans and animals, which can be fatal.[42]

EPA identified an instance where recreation in water with concentrations almost exactly at the threshold used in Iowa resulted in harmful health effects.[43] EPA recommended a microcystins criterion of 8 µg/L based on those effects, as well as use of the short-term studies that EPA considered in adopting the recommended criteria.[44]

The types of harm described above provided the basis for EPA's recommended criteria. The EPA's recommendation document reviews the outcomes of numerous studies, including short-term exposure to waters found to have microcystin, and concluded that the safe threshold was 8 µg/L.[45] This threshold is calculated to prevent liver and kidney toxicity.[46] EPA identified case studies in which exposure to microcystins was believed to result in severe liver impacts.[47]

Microcystin have been a persistent problem in Iowa lakes. For over a decade, IDNR used a threshold of 20 µg/L microcystins for warnings at beaches with public access.[48] IDNR lowered this threshold to 8 ug/L in 2020 after EPA recommended the lower concentration.[49] Well over 100 different lakes have had measurable concentrations of microcystin in the last fifteen years. The problem is so severe that from 2015-2019, 15 lakes showed *average* concentrations of microcystin above EPA's recommended criterion of 8 µg/L, and 48 lakes had at least one measurement greater than 8 µg/L.[50] IDNR has issued more than 300 weekly beach advisories due to high concentrations of microcystin.[51]

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[40] *See id.* at 64-68; Iowa Department of Public Health, "Microcystin," available at https://hhs.iowa.gov/health-prevention/providers-professionals/center-acute-disease-epidemiology/epi-manual/environmental-disease/microcystin (last accessed Oct. 10, 2025); "Health Effects from Cyanotoxins," U.S. EPA (July 10, 2025), available at https://www.epa.gov/habs/what-are-effects-habs.

[41] *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019) at 59.

[42] Iowa Department of Public Health. *Harmful Algal Blooms*, at https://idph.iowa.gov/ehs/algal-blooms.

[43] *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019)at 67 (identifying reported symptoms of abdominal cramps, diarrhea, nausea vomiting, fever, headache, rash, eye irritation, ear ache, neurologic symptoms, tingling, confusion, and respiratory symptoms).

[44] *See id.* at 60.

[45] *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019) at 59-61, 64-68 (describing studies).

[46] *Id.* at 49 (identifying kidney and liver damage as endpoints of the conceptual model for criteria development).

[47] *Id.* at 66 (describing case studies, including liver failure in a small child).

[48] "New Threshold More Protective of Public Health," Iowa Environmental Council (June 8, 2020), *available at* https://www.iaenvironment.org/newsroom/water-and-land-news/idnr-announces-new-microcystin-threshold.

[49] *Id.*

[50] IEC analysis of data from AQuIA (available at https://programs.iowadnr.gov/aquia/search/).

[51] *Id.*

Recent studies have identified climate change as a contributing factor to cyanobacterial blooms due to its effect on the environmental conditions that promote the growth of blue green algae.[52] These conditions include warmer water temperatures and changes in rainfall patterns. For example, intense rainfall events can increase the runoff of nutrients from land to water bodies, while longer dry periods between these more frequent concentrated bursts—the projected pattern—may result in water bodies retaining the nutrients for longer periods; EPA therefore expects an increase in harmful algal blooms as a result of these changes.[53] Unfortunately, this appears to already be the trend in Iowa, with the number of beach advisories issued for Iowa state park beaches due to high levels of microcystin increasing in recent dry years.

Data show no decline in nitrate loading in Iowa.[54] The annual warnings and increasing trend in Iowa underscore the need for adoption and implementation of a microcystins water quality criterion and a recreational advisory threshold to protect recreational uses. Many states, including Iowa, already have goals to reduce nutrients. Preventing harm to human health and increasing the safety of recreation, which these criteria were designed to achieve, provide additional reasons to pursue state nutrient standards.

B. EPA's Recommended Microcystins Criterion is Necessary to Protect Recreational Uses.

The establishment of a numeric criterion to protect against microcystins in surface water is not only necessary to protect Iowa waters, but also practicable. EPA has developed scientific support for a microcystins criterion. Its adoption would add to IDNR's tools to interpret the state's narrative standard prohibiting excess nutrients. Moreover, the IDNR already uses a microcystins advisory concentration to evaluate lakes for recreation equal to the concentration recommended by EPA.

The proposed standard would set a numeric criterion for acceptable levels of microcystins in Iowa's lakes based on the phosphorus and nitrogen that causes it. These rules would protect Iowa's lakes and lake communities from harmful algae blooms before they occur.

The state's narrative standard prohibiting toxics provides no guidance on preventing the consequences of non-toxic pollutants that lead to generation of toxins.[55] EPA's Water Quality Standards Handbook explains that narrative toxicity standards are appropriately met through procedures such as whole effluent toxicity testing.[56] Microcystins are not a pollutant discharged or released into the water; they are a byproduct of nontoxic pollutants (nitrogen and phosphorus)

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[52] US EPA Office of Water. *Impacts of Climate Change on the Occurrence of Harmful Algal Blooms* (EPA 820-S-13-001, May 2013).
[53] *Id.*
[54] *See* Jones CS, Nielsen JK, Schilling KE, Weber LJ (2018) Iowa stream nitrate and the Gulf of Mexico. PLoS ONE 13(4): e0195930. https://doi.org/10.1371/journal.pone.0195930.
[55] *See* 567 IOWA ADMIN. CODE r. 61.2(3)(d).
[56] "Water Quality Standards Handbook Chapter 3: Water Quality Criteria," U.S. EPA (Dec. 2023), Ch. 3 at 7, available at https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter3.pdf.

that allow cyanobacterial growth. The narrative standard neither sets a threshold nor explains how to implement the standard to ensure designated uses are protected in such a situation.

EPA's recommended criteria for microcystins determined a safe threshold for recreational use based on copious review of the literature.[57] The threshold EPA determined is not based on an abstract notion of "aesthetically objectionable conditions" or aquatic life that pose a mere "nuisance."[58] It is scientifically calculated to protect human health based on the risks posed by a class of toxin. IDNR has found the toxin in Iowa consistently and repeatedly.[59] The concentrations IDNR finds are regularly above the threshold determined by EPA – and in fact have been more than double that threshold.[60] IDNR uses EPA's threshold to issue advisory notices to the public.[61] Given the repeatedly high microcystin concentrations found in Iowa waters, a narrative standard is inadequate and IDNR should adopt a numeric microcystin standard.

C. DNR Needs to Adopt Criteria for Microcystins to Protect Drinking Water Uses.

Excess nutrient pollution that results in cyanobacteria blooms and their associated toxins (i.e., microcystin) poses a significant public health threat in recreational lakes that are also designated for drinking water use. This is because dangerous cyanobacterial toxins can pass through standard treatment practices for drinking water.[62] EPA issued a recommended microcystin health advisory for young children of 0.3 µg/L,[63] which is less than five percent of the recommended criterion for recreational exposure. Thus, to meet the drinking water standard, water treatment facilities would need to remove more than 95 percent of microcystin even if the recreational standard were met.

The growing problem of harmful algal blooms extends beyond Iowa's lakes. For example, in 2020 and 2021, Des Moines Water Works detected microcystin produced by cyanobacteria in the Raccoon River.[64] The City of North Liberty posted a warning sign at a creek near a public park after residents observed green scum on the surface that was toxic algae.[65]

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[57] *See Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019) at 113-142.

[58] *Cf.* IOWA ADMIN. CODE r. 567-61.3(2).

[59] *See* "Beach Monitoring: Safe to Swim?", Iowa Environmental Council, available at https://www.iaenvironment.org/our-work/clean-water-and-land-stewardship/swimming-advisories (last visited Oct. 8, 2025).

[60] *Id.*

[61] *See* IDNR, "Beach Monitoring," *available at* https://programs.iowadnr.gov/aquia/programs/beaches (last accessed Oct. 10, 2025).

[62] *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019) at 108 (describing studies).

[63] *Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins*, U.S. EPA (June 2015) at 2.

[64] Des Moines Water Works, "NEWS RELEASE: Des Moines Water Works Lifts Water Restrictions; Microcystin Potential Continues Need for Wise Water Use Practices," (July 2021), *available at* https://www.dmww.com/news_detail_T37_R238.php (last accessed Oct. 10, 2025).

[65] City of North Liberty. Press release. *Blue-green algae identified in Beaver Kreek; migrating to Muddy Creek* (July 28, 2017), available at http://northlibertyiowa.org/2017/07/28/blue-green-algae-identified-in-beaver-kreek-migrating-to-muddy-creek/.

Nationwide studies have repeatedly found microcystin concentrations in finished drinking water, with concentrations as high as 12.5 µg/L.[66] The most widely known example occurred in 2014 when Toledo, Ohio, found the concentration of microcystin in finished drinking water tested at 2.5 µg/L.[67] A similar event occurred in 2018: Salem, Oregon, issued a do-not-drink advisory a week after the State of Oregon issued a recreation advisory in a reservoir upstream of Salem's drinking water source.[68] The threat to drinking water also exists locally. Des Moines Water Works detected microcystin in its finished drinking water in 2016.[69]

Currently, 36 Iowa lakes and reservoirs are designated for both Class A recreational and Class C drinking water use.[70] Of those 36 lakes and reservoirs, only 16 have beaches that are monitored as part of IDNR's beach monitoring program.[71] A majority of those that are monitored (13 out of 16) had a microcystin-related advisory issued during 2006-2025.[72]

IDNR has taken the position that the recreational standard is not the appropriate standard to protect drinking water, arguing that the recreational standard was based on incidental ingestion of raw water and drinking water suppliers may filter out toxins.[73] IDNR specifically notes that water treatment providers may adjust operations to remove cyanotoxins. IDNR's position seems to assume that all treatment providers have constant knowledge of cyanotoxin concentrations and have the means in place to adjust treatment operations. EPA has found that achieving the drinking water health advisory level of 0.3 ug/L may require greater treatment efforts than operators would typically use for pathogens and depends on a variety of factors.[74] Overall, EPA's position is that treatment for microcystin is a complex process:

> Any variation in treatment methods aimed at reducing toxins concentrations need to be tailored to the type(s) of cyanobacteria present and the site-specific water quality (e.g. pH, temperature, turbidity, presence of natural organic material

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[66] *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin*, U.S. EPA (May 2019) at 108 (describing studies).
[67] *Id.*
[68] *Id.* at 109.
[69] "Water Works Finds Microcystin in System," The Des Moines Register (Aug. 3, 2016), *available at* https://www.desmoinesregister.com/story/news/2016/08/04/water-works-finds-microcystin-system/88054802/.
[70] IDNR, Surface Water Classification at 103-112 (July 24, 2019), available at https://www.epa.gov/system/files/documents/2024-03/ia-classifications-2023.pdf.
[71] *See* IDNR, Beach Monitoring, available at https://programs.iowadnr.gov/aquia/programs/beaches (last visited Oct 10, 2025). *See also* Iowa Department of Natural Resources, Surface Water Classification at 92-112 (2018), available at http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Quality-Standards.
[72] IEC analysis of data from AQuIA (available at https://programs.iowadnr.gov/aquia/search/).
[73] *Public Participation Responsiveness Summary for Iowa's 2018 Section 303(d) List of Impaired Waters*, IDNR (Feb. 21, 2020) at 20.
[74] *Recommendations for Public Water Systems to Manage Cyanotoxins in Drinking Water*, U.S. EPA (2015) at 17-22, available at https://www.epa.gov/sites/production/files/2017-06/documents/cyanotoxin-management-drinking-water.pdf (concluding that "CT values required for oxidizing microcystin-LR (and by assumption, total microcystins) may be higher than those required for inactivation of Giardia cysts, depending on pH, temperature and initial concentration of microcystins.").

> (NOM), etc.), the treatment processes already in place, and the utility's multiple treatment goals (e.g., turbidity and total organic carbon (TOC) removal, disinfection requirements, control of disinfection by-products (DBP) formation, etc.). Utilities need to have an understanding of the type and concentration of cyanotoxins present in the source water and should conduct site-specific evaluations such as jar testings and piloting in order to determine the most effective treatment strategy.[75]

The problem with relying on standard treatment is its ineffectiveness at removing microcystin that is outside the cyanobacterial cells:

> Conventional treatment is generally considered to have limited effectiveness for the removal of the extracellular microcystins. Therefore, additional processes such as adsorption, chemical oxidation, biodegradation or reverse osmosis, and nanofiltration are required to remove extracellular microcystins.[76]

The fact that microcystin has been detected in finished drinking water of cities like Toledo does not appear to support IDNR's assumption that treatment will consistently remove the toxin.

Given the limited number of lakes monitored by IDNR and the scope of sampling, cyanobacteria and cyanotoxin threats are likely much more prevalent than currently reported. For example, there are numerous types of cyanobacteria associated with varying types of cyanotoxin compounds that may not be detected by current limited monitoring for microcystin.[77]

At a minimum, adopting the standard to protect recreation and achieving reductions in microcystin levels will avoid monitoring and treatment costs that would be incurred by drinking water sources to ensure removal of cyanotoxins. As EPA stated in its *Drinking Water Health Advisory for Microcystins*, "Long-term prevention of cyanobacterial blooms likely requires reductions in nutrient pollution. Excess nitrogen and phosphorus in aquatic systems can stimulate blooms and create conditions under which harmful cyanobacteria thrive."[78]

Beyond the direct dangers of cyanotoxins, excess nutrient pollution resulting in algae and cyanobacteria blooms create another significant threat to safe drinking water use in Iowa's lakes through the treatment required to remove the toxins. When disinfectants (e.g., chlorine) are used to treat drinking water, they can "react with organic carbon produced by algae in source waters" and form disinfection byproducts (DBPs) that can harm public health.[79] In addition, research

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[75] *Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins*, U.S. EPA (June 2015) at 42.
[76] *Id.* at 43.
[77] *See* Proposed Water Quality Standards for the State of Missouri's Lakes and Reservoirs, 82 Fed. Reg. 61213, 61216 (December 27, 2017).
[78] *Id.* at 42.
[79] *Drinking Water Health Advisory for Cyanobacterial Microcystin Toxins*, U.S. EPA, EPA/820/R-15/100, at 45, available at https://www.epa.gov/sites/production/files/2017-06/documents/microcystin-report-2015.pdf.

indicates byproducts are linked to increases in bladder cancer and problems with the liver, kidney, central nervous system, and reproductive system.[80]

Algae and cyanobacterial blooms impair more than the safety of drinking water. They can impair taste and odor of drinking water, and/or result in costly deterrents of use.[81]

Adopting water quality criteria for microcystins will protect against cyanotoxins that threaten recreation and drinking water sources across the state. IDNR needs to take prompt action to protect against these risks before future droughts force Iowans to grapple with unswimmable lakes and undrinkable water in the heat of a dry summer.

V. IDNR Should Adopt River Numeric Nutrient Criteria to Protect Human Health and Aquatic Life.

Iowa has a criterion for nitrate to protect drinking water uses in rivers (Class C), but no other numeric nutrient criteria. It has become clear that IDNR has interpreted the lone nitrate criterion as a long-term, chronic standard rather than short-term acute standard. This puts Iowa drinking water sources in jeopardy and threatens public health. We request IDNR interpret this standard as acute. In addition, emerging research shows Iowa may need a more stringent chronic standard to protect human health.

A. The Existing Nitrate Standard for Drinking Water Sources Protects Against Acute Effects.

According to EPA, "[n]itrate is an acute contaminant, meaning that one exposure can affect a person's health. Too much nitrate in your body makes it harder for red blood cells to carry oxygen."[82] EPA previously found that nitrate levels above the MCL of 10 mg/L present an imminent and substantial endangerment to human health.[83] Recent actions by IDNR and EPA in identifying impaired waters have inappropriately treated nitrate as a conventional pollutant with only chronic effects.

The Clean Water Act requires states to biennially submit lists of waters not meeting water quality standards to EPA for review and approval.[84] For several years, IDNR and EPA disagreed

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[80] "Water Systems, Disinfection Byproducts, and the use of Monochloramine," U.S. EPA (Feb. 24, 2009), available at https://www.epa.gov/sites/production/files/2015-09/documents/why_are_disinfection_byproducts_a_public_health_concern.pdf (last visited Oct. 10, 2025).

[81] *See* Walter K. Dodds, Wes W. Bouska, Jeffrey L Eitzmann, Tyler J. Pilger, Kristen L. Pitts, Alyssa J. Riley, Joshua T. Schloesser, and Darren J. Thornbrugh, Eutrophication of U.S. Freshwaters: Analysis of Potential Economic Damages, Environmental Science & Technology, Vol. 43, No.1 at 12-19 (2009).

[82] *Frequently Asked Questions About Nitrates & Drinking Water*, Env't Prot. Agency (Sept. 2012), https://nepis.epa.gov/Exe/ZyPDF.cgi/P10150PM.PDF?Dockey=P10150PM.PDF.

[83] *See, e.g.*, Administrative Order on Consent, *In the Matter of Yakima Valley Dairies*, SDWA-10-2013-0080, at 7 (Mar. 19, 2013) (finding that "above the concentration of 10 mg/L in drinking water, nitrate may present an imminent and substantial endangerment to the health of persons"), https://www.epa.gov/sites/default/files/2017-12/documents/lower-yakima-valley-groundwater-consent-order-2013.pdf.

[84] 33 U.S.C. § 1313(d).

about whether Iowa's nitrate criterion to protect drinking water sources should be evaluated like conventional pollutants or non-conventional and toxic pollutants. In 2024, IDNR published a list for public comment; EPA commented that IDNR was improperly applying the nitrate standard for drinking water sources. IDNR declined to change its approach and submitted the list to EPA for approval. EPA provided the required public notice seeking comment for a proposed partial disapproval of Iowa's list,[85] then added seven waters as impaired for nitrate on December 30, 2024. This decision constituted the final agency action on the 2024 impaired waters list. No party appealed EPA's decision.

Months later, following an undocumented oral conversation,[86] IDNR emailed to EPA documents created when adopting the water quality standards in 2001, as well as EPA's 2002 approval letter and decision document supporting the approval. EPA had not requested this information under the procedures in 40 C.F.R. § 130.7 because EPA had already received or written these documents. IDNR's email to EPA did not articulate any arguments for changing the impaired waters list.[87] This information exchange occurred outside the process contemplated in the Clean Water Act and its implementing regulations.[88]

On October 9, 2025, IEC, the Environmental Law & Policy Center, and Food & Water Watch submitted a letter to EPA responding to IDNR's position that Class C waterbodies could exceed the criterion up to ten percent of the time without impairing the use.

In 2001, IDNR revised the rule with the nitrate criterion by replacing "acute" with "MCL" for nitrate as N.[89] The MCL protects against short-term exposure to infants, not long-term chronic effects.[90] EPA's website for MCLs notes that the nitrate MCL is intended to prevent infants from becoming "seriously ill" with possibility of death if untreated.[91] In addition, "Symptoms include shortness of breath and blue-baby syndrome."[92] These are not chronic, oncogenic effects. EPA specifically identified the potentially toxic effects in the same Water Quality Standards Handbook that IDNR relied on: "MCLs of the SDWA, where they exist, control toxic chemicals in finished drinking water."[93] IDNR explicitly wrote "MCL" into the 2001 submission (not "chronic") and thereby incorporated the MCL standard as the water quality standard. That is what EPA approved.

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[85] 40 C.F.R. § 130.7(d)(2); *see* "EPA Takes Action on Iowa's 2024 Impaired Waters List," U.S. EPA, *available at* https://www.epa.gov/newsreleases/epa-takes-action-iowas-2024-list-impaired-waters (last visited Sept. 19, 2025).

[86] EPA's letter references documents submitted by IDNR on May 2, 2025. The text of the email from IDNR contains, in full, "Jeff, Jaime, I've attached the documents mentioned in last week's meeting regarding Iowa's WQS packages from 2001/2002. Hope you have a great weekend. Lori," followed by a signature block.

[87] *See id.*

[88] *See* 33 U.S.C. § 1313(d)(2); 40 C.F.R § 130.7(d)(2).

[89] IDNR, "1999 Triennial Review: Iowa's Water Quality Standards ISSUE PAPER – Class C Criteria & Its Implementation," at 11 (2001 IDNR Rulemaking Package at 84).

[90] *See* "National Primary Drinking Water Regulations," U.S. EPA (last accessed Sept. 15, 2025), *available at* https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations.

[91] "National Primary Drinking Water Regulations," U.S. EPA (last accessed Sept. 15, 2025), *available at* https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations.

[92] *Id.*

[93] EPA WQS Handbook (1994) at 3-12.

Typical drinking water treatment does not remove nitrate; EPA has identified ion exchange, reverse osmosis, or electrodialysis as treatment options.[94] Overlooking the acute consequences of high nitrate creates inconsistency with Safe Drinking Water Act requirements that apply on a single-sample basis to public water suppliers.

From a practical standpoint, excursions above the water quality standard have created risk to drinking water suppliers who have designed systems that reasonably rely on Class C drinking water sources meeting the MCL. This standard is exceeded because a standard drinking water treatment process does not remove the nitrates and nitrites, so this level of nitrates is not normally removed through the treatment process.

The water quality standard documents that IDNR submitted to EPA do not define the methodology for impaired waters listing; IDNR's methodology for impairment was not part of the water quality standard package that EPA reviewed and approved. IDNR stated in its submission to EPA that "the use of the criterion by other Department activities, such as the development of 303d listings, 305b assessment, etc., must consider the basis of the numerical criteria and merge that with their own program guidance and procedures."[95] Despite that, IDNR stated that in implementing wasteload allocations for permit limits, "Any Class C value would be treated as a chronic-type of criteria."[96] In practice, however, IDNR has recognized the toxic nature of nitrate – it relied on EPA's *Technical Support Document for Water Quality-Based Toxics Control* to derive effluent limits.[97]

Even if the numeric criterion were interpreted as chronic, Iowa has a narrative water quality standard that prohibits toxic pollutants in toxic amounts for Class C waters:[98]

> All substances toxic or detrimental to humans or detrimental to treatment process shall be limited to nontoxic or nondetrimental concentrations in the surface water.

Because blue baby syndrome is an acute effect, not chronic, nitrate must stay below the 10 mg/L level to meet the narrative standard. Central Iowa Water Works imposed a lawn watering ban in the summer of 2025 due to high nitrate concentrations that limited the utility's capacity to provide water below 10 mg/L nitrate.[99]

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[94] U.S. EPA, "Addressing Nitrate in Drinking Water with the Drinking Water State Revolving Fund," May 2021, *available at* https://www.epa.gov/sites/default/files/2021-06/documents/addressing_nitrates_with_the_dwsrf-final.pdf (describing funding for additional nitrate treatment for drinking water sources).

[95] IDNR, "Public Participation Responsiveness Summary" (Aug. 30, 2000), at 4 (2001 IDNR Rulemaking Package at 42).

[96] IDNR, "1999 Triennial Review: Iowa's Water Quality Standards ISSUE PAPER – Class C Criteria & Its Implementation," at 3 (2001 IDNR Rulemaking Package at 76).

[97] Tom Atkinson (IDNR), "Deriving total nitrogen limits from the WLA in the Cedar River TMDL," Nov. 20, 2008.

[98] IOWA ADMIN. CODE r. 567-61.3"c"(2).

[99] "CIWW Issues Lawn Watering Ban Effective Immediately," Central Iowa Water Works (June 12, 2025), *available at* https://www.ciww.gov/news-1/ciww-issues-lawn-watering-ban-effective-immediately (last accessed Sept. 26, 2025).

B. DNR Should Adopt a Nitrate Criterion Based on Cancer Risk for Drinking Water Sources.

EPA has adopted a maximum contaminant level for nitrate in finished drinking water of 10 mg/L based on the level that would reduce incidence of methemoglobinemia (blue baby syndrome) and "protect the majority of infants."[100] A growing body of research has found human health effects from nitrate ingestion at concentrations below the MCL of 10 mg/L. To protect Iowans from the associated health risks, we recommend IDNR adopt a lower nitrate criterion to protect against cancer and other chronic effects of drinking water with high nitrate. Alternatively, IDNR could adopt a criterion to protect aquatic life based on research on chronic effects.

As IEC reported in 2024, bladder cancer and colorectal cancer have been associated to exposure to nitrate in drinking water, including at concentrations below 10 mg/L.[101] Some studies have also linked childhood nervous system cancer, kidney cancer, ovarian cancer, and thyroid cancer to high nitrate levels in drinking water.[102] Many of the studies identifying links between cancer and nitrate use long-term health data from Iowans who have been exposed to nitrate, often at concentrations below 10 mg/L.[103]

Scientists know that nitrate byproducts in the body (n-nitroso compounds) can cause mutations and cancerous tumors in developed cells and organs.[104] Similar processes are also thought to affect developing cells and organ systems. Nitrate in water supplies has been linked to spontaneous miscarriages (preterm birth) and birth defects such as neural tube defects of the brain and spinal cord, including spina bifida, oral cleft defects, and limb deficiencies. [105]

The Iowa-specific research linking nitrate to cancer and the unusually high cancer rates in Iowa are a signal that the state needs to adopt stronger standards to protect human health from chronic

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[100] *See* "Statement of Basis and Purpose for Proposed Interim Standards" (December 1975), *available at* https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91015862.TXT.

[101] "Nitrate in Drinking Water: A Public Health Concern for All Iowans," Iowa Environmental Council (May 2024), *available at* https://www.iaenvironment.org/webres/File/IEC_Nitrate_in_Drinking_Water_2024FINAL.pdf (summarizing peer-reviewed research on nitrate health effects).

[102] *Id.*; A. Zumel-Marne et al., *Environmental Factors and the Risk of Brain Tumours in Young People: A Systematic Review*, 53 NEUROEPIDEMIOLOGY 121 (2019), https://www.karger.com /Article/Fulltext/500601?utm_source=external&utm_medium=referral&utm_campaig n=getFTR; *see also*, Yanqi Xu, *Nebraska's Dirty Water,* THE READER (Oct. 28, 2022), https://thereader.com/2022/10/28/nebraskas-dirty-water/ ("Areas of the state that have higher pediatric cancer rates and birth defect rates also have higher nitrate levels, researchers say.").

[103] "Nitrate in Drinking Water: A Public Health Concern for All Iowans," Iowa Environmental Council (May 2024), *available at* https://www.iaenvironment.org/webres/File/IEC_Nitrate_in_Drinking_Water_2024FINAL.pdf.

[104] Brambilla, Giovanni and Antonietta Martelli. 2005. Keynote comment: nitrosatable drugs, cancer, and guidelines for genotoxicity. *The Lancet Oncology*, Vol. 6(8):538-9. https://doi.org/10.1016/S1470-2045(05)70257-6. See Brender, Jean D., et al. 2013. Prenatal Nitrate Intake from Drinking Water and Selected Birth Defects in Offspring of Participants in the National Birth Defects Prevention Study. *Environmental Health Perspectives*, Vol. 121(9):1083-1089. https://ehp.niehs.nih.gov/doi/10.1289/ehp.1206249.

[105] Allison R. Sherris et al., *Nitrate in Drinking Water during Pregnancy and Spontaneous Preterm Birth: A Retrospective Within-Mother Analysis in California*, 129 ENV'T HEALTH PERSPECTIVES (2021), https://ehp.niehs.nih.gov/doi/full/10.1289/EHP8205.

effects of nitrate. IDNR should include adoption of a standard for nitrate to protect against cancer and other chronic exposure health effects in its work plan for the coming three year period.

A. *Numeric Nutrient Criteria Are Necessary and Feasible for Class B Flowing Waters.*

Rivers and reservoirs in Iowa suffer from similar nutrient problems to lakes. Other states have adopted river nutrient criteria to address these types of problems and have been implementing them for years. Iowa needs to follow suit and adopt criteria that fully protect the designated uses of rivers.

Minnesota adopted numeric nutrient criteria for rivers in 2014.[106] Despite strong opposition from cities and other dischargers,[107] the criteria have been in effect for more than a decade without disrupting municipalities or the economy. The criteria vary by ecological region just as the lake nutrient criteria, reflecting the lower nutrient concentrations in northern Minnesota streams and rivers. As with lakes, some of the ecological regions overlap with Iowa; IDNR could use these as a scientific foundation for comparable criteria in Iowa.

IDNR, assisted by a technical advisory committee, conducted an analysis of Iowa-specific nutrient data and a review of scientific literature and other relevant technical information to determine levels of nutrients and nutrient response parameters that are protective of Iowa's stream biological assemblages and designated aquatic life uses.[108] The purpose of the project was to "identify benchmark values that can serve as a foundation for establishment of nutrient enrichment criteria."[109] The data analysis approach used "focused on the strength of evidence connecting nutrient stressors with adverse changes in stream biological communities."[110]

Using this approach, IDNR was able to establish numeric nutrient enrichment criteria for two types of wadeable, warm water streams, based on nutrient benchmarks for total nitrogen (TN) and total phosphorus (TP) combined with nutrient-response indicator benchmarks. According to IDNR's 2013 report that includes these recommendations (attached as Appendix B), the benchmark values included in the recommended numeric nutrient criteria are supported by data and evidence that is sufficiently strong to "make them *eligible for immediate use* for water quality assessments and reporting purposes" (emphasis added).[111] This would mean adopting criteria for a range of parameters, including phosphorus and algae.

Despite having this foundational scientific basis for river numeric criteria, Iowa has not adopted any numeric nutrient criteria in rivers.

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[106] *See* MINN. R. 7050.0222.

[107] *See* Minnesota Environmental Science and Economic Review Board, *Petition for Stay and Reconsideration*, July 3, 2014, *available at* https://www.pca.state.mn.us/sites/default/files/wq-rule4-06hh.pdf.

[108] IDNR, *Development of Nutrient Enrichment Criteria* (Draft, Aug. 23, 2013). Attached as Appendix B.

[109] *Id.* at i.

[110] *Id.*

[111] *Id.* at iv-v.

VI. IDNR Must Adopt PFAS Criteria to Protect Human Health.

Per- and polyfluoroalkyl substances (PFAS), sometimes called "forever chemicals," are synthetic chemicals that can resist heat, grease, and water. They have been used in consumer and industrial products such as water-resistant fabrics, cleaning products, and nonstick cookware since the 1940s.[112] Ingesting PFAS has been linked to reproductive issues, developmental delays in children and infants, increased risk of kidney and testicular cancer, and other health effects.[113]

Since the last triennial review, EPA has taken significant action on PFAS. EPA's actions provide a basis for IDNR to adopt criteria to protect human health from potential chronic effects of PFAS in drinking water as well as chronic effects to aquatic life.

On April 10, 2024, EPA adopted National Primary Drinking Water Regulations for six PFAS, including a hazard index for a mix of PFAS.[114] The maximum contaminant levels are enforceable limits for drinking water sources. EPA also set goals for the six contaminants.

Table 2. PFAS Regulations, 2024.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA	Zero	4.0 parts per trillion (ppt)
PFOS	Zero	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index	1 (unitless) Hazard Index

EPA's rule provided until 2029 for public water suppliers to comply with the regulation.

While the MCLs apply only to finished drinking water, EPA also developed draft recommendations for ambient water quality to protect human health.[115] These criteria were developed to protect against chronic human health effects of PFAS due to drinking water and eating fish or shellfish.[116]

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[112] EPA, "Our Current Understanding of the Human Health and Environmental Risks of PFAS," available at https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas (last visited Oct. 6, 2025).
[113] *Id.*; IDNR, "Summary of PFAS Testing of Public Water Supplies (Tiers 1-3)" (Mar. 3, 2023), available at https://www.iowadnr.gov/media/7038/download?inline.
[114] EPA, "Per- and Polyfluoroalkyl Substances (PFAS) Final PFAS National Primary Drinking Water Regulation," *available at* https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas (last accessed Oct. 6, 2025).
[115] "Draft National Recommended Ambient Water Quality Criteria for the Protection of Human Health for Perfluorooctanoic Acid, Perfluorooctane Sulfonic Acid, and Perfluorobutane Sulfonic Acid," 89 Fed. Reg. 105,041 (Dec. 26, 2024), corrected at 90 Fed. Reg. 3827 (Jan. 15, 2025).
[116] *Id.* at 105,042.

PFAS	Water + organism HHC in ppt (ng/L)	Organism only HHC in ppt
PFOA	0.0009	0.0036
PFOS	0.06	0.07
PFBS	400	500

EPA developed these recommended criteria to apply in waters beyond those used directly for drinking water sources. We recommend IDNR adopt them in Class B and Class C waters.

To protect aquatic life, EPA developed recommended criteria for PFOA and PFOS.[117] Unlike the criteria above, these protect against both chronic effects and acute effects. EPA based the criteria on detailed review of toxicity studies of aquatic life, verifying study methodology when necessary.[118] IDNR needs to incorporate these criteria into Iowa's ambient water quality criteria for Class B waters.

VII. IDNR Must Ensure the Use Attainability Analysis Process Adopts the Highest Attainable Use for All Waters.

The Iowa Environmental Council appreciates IDNR's priority to continue to review and update Use Attainability Analyses to ensure appropriate designations for Iowa streams and ensure water quality is sufficient to support the ways Iowans use Iowa streams. In addition to the ongoing stream use attainability analyses, IDNR should also review use designations for Iowa's lakes to ensure appropriate use designations are assigned to protect all attainable uses for these waters. Dozens of Clean Water Act discharge permits have not been reissued since IDNR updated water quality standards in 2006 to ensure a presumption that all waters are fishable and swimmable, so these facilities may be discharging pollution at rates exceeding water quality criteria.[119]

Section 303 of the Clean Water Act requires states to adopt water quality standards that "serve the purposes" of the Act, which includes the Act's interim goal of section 101(a)(2) of the Clean Water Act (CWA). CWA § 101(a)(2) provides:

> [I]t is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983.

To be consistent with the interim goal of the Act and EPA's implementing water quality standards regulation at 40 CFR Part 131, states must provide water quality that supports these

[117] "Final Recommended Aquatic Life Criteria and Benchmarks for Select PFAS," 89 Fed. Reg. 81,077 (Oct. 7, 2024).

[118] "EPA Response to Public Comments on the 2022 Draft Recommended Aquatic Life Criteria for Perfluorooctanoic Acid (PFOA) And Perfluorooctane Sulfonate (PFOS)" (Sept. 2024), at 2-3, available at https://www.epa.gov/system/files/documents/2024-09/pfoa-pfos-public-comments-response-2024.pdf.

[119] Iowa adopted a rebuttable presumption of fishable and swimmable uses in 2006. *See* "Water Quality Standards," IDNR, available at https://www.iowadnr.gov/media/4898/download?inline. *See also* "Permit Listing Spreadsheet," IDNR, available at https://www.iowadnr.gov/media/7591/download?inline (last accessed Oct. 8, 2025) (showing 32 facilities with five-year permits expiring in 2010 or earlier).

uses, including recreation in and on the water.[120] EPA has interpreted this requirement to mean that states must protect all waters of the state for primary contact recreation and aquatic life uses, unless a use attainability analysis demonstrates that these uses are not attainable for a water body or segment.[121] The Clean Water Act and the water quality standards regulation establish a rebuttable presumption that the CWA § 101(a)(2) uses ("fishable/swimmable" uses), including primary contact recreation, *are* attainable and should apply to all waters. Therefore, all lakes in Iowa that are not currently designated for recreational or aquatic life uses should be designated for A1 primary contact recreation and B(LW) aquatic life uses unless a use attainability analysis has been conducted that demonstrates that recreational and/or aquatic life uses are not attainable.

In addition, Iowa has not sought to designate any Outstanding Iowa Waters for many years. IDNR should assess whether additional waters should be added to the Outstanding Iowa Waters List, focusing in particular on the 24 waters that IDNR identified as meeting all designated uses in the 2024 assessment cycle.[122]

VIII. IDNR Should Retain Antidegradation Protections for Waters Meeting Standards.

We are concerned that changes to the antidegradation rules and procedures could limit the effectiveness of the antidegradation process, which could result in unnecessary degradation of Iowa waters inconsistent with the requirements of the Clean Water Act. We suggest other changes below that we believe would facilitate a more effective process.

EPA approved Iowa's antidegradation rules and an Antidegradation Implementation Procedure in 2010, and later disapproved proposed rule amendments in 2017.[123] The denial left the 2010 Antidegradation Implementation Procedure issued by the Iowa Department of Natural Resources (IDNR) in effect as an enforceable water quality standard.

IEC has regularly reviewed and commented on antidegradation proposals for years. Based on our reviews, we have found that antidegradation alternatives analyses fail to address social and economic importance, are not premised on all reasonable and cost effective best management practices from nonpoint sources, do not consider all feasible alternatives, and do not address environmental justice concerns. On the whole, Iowa needs stronger antidegradation protections to prevent our limited universe of clean waters from backsliding into impairment.

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[120] 40 CFR 131.10(j).

[121] *See* U.S. EPA, *Water Quality Standards Handbook*, Ch. 2 "Designation of Uses" (2012), *available at* https://www.epa.gov/sites/default/files/2014-10/documents/handbook-chapter2.pdf.

[122] IDNR, "2024 305(b) Assessment Summary: Summary Statistics," *available at* https://programs.iowadnr.gov/adbnet/Assessments/Summary/2024 (last accessed Oct. 8, 2025).

[123] Letter from Mark Hague, U.S. EPA Region 7, to John Tack, IDNR (Jan. 19, 2017), at 8 ("Despite the concerted effort by IDNR and EPA to reach consensus on an approvable rule, the EPA is disapproving the revised rules.").

A. IDNR Fails to Require Reasonable and Cost Effective Nonpoint Source Runoff Controls to Justify Degradation.

Federal law requires IDNR to ensure that, in allowing water quality degradation, "there shall be achievement of…all cost-effective and reasonable best management practices for nonpoint source control."[124] Evidence clearly shows this is not the case for some pollutants, and therefore IDNR should not authorize degradation in those cases.

IDNR's approach to meeting this requirement is to evaluate "Existing water quality and nonpoint source runoff control technology…in the course of the Iowa continuing planning process."[125] This would fulfill federal regulatory obligations to maintain a continuing planning process.[126] But a statement in rule does not demonstrate that IDNR *has* a planning process that fulfills the obligation for nonpoint sources today. The webpage IDNR maintains for water planning contains no plans from the last decade – all plans in the "Current" section are from 2000-2013.[127] The link for a river restoration plan is not on the IDNR website.[128] The last statewide water plan is decades old.[129]

The Environmental Protection Commission and IDNR have broad authority to prevent and abate pollution under Iowa law through rules and their implementation.[130] This includes regulation of animal feeding operations, many of which IDNR treats as nonpoint sources not subject to NPDES permitting requirements. IDNR must adopt rules for animal feeding operations that require cost-effective and reasonable BMPs and ensure that the facilities implement the BMPs.

In practice, reporting under the Nutrient Reduction Strategy shows that cost-effective and reasonable best management practices have not been adopted across the state.[131] IDNR needs to make greater efforts to achieve these practices before allowing degradation.

B. Antidegradation Reviews Fail to Address Social and Economic Importance.

Preventing degradation is a fundamental component of the Clean Water Act - protecting water that meets water quality standards. The Act allows degradation only when "necessary to accommodate important economic or social development in the area in which the waters are located."[132] IDNR has explained that this importance addresses the "social and economic

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[124] 40 C.F.R. § 131.12(a)(2).
[125] IOWA ADMIN. CODE r. 567-61.2(3).
[126] 40 C.F.R. § 130.5.
[127] IDNR, "Iowa's Water Plan," *available at* https://www.iowadnr.gov/environmental-protection/water-quality/iowas-water-plan (last accessed Oct. 8, 2025)
[128] *Id.*
[129] *Id.*
[130] IOWA CODE §§ 455B.172, 455B.173.
[131] *See, e.g.*, "The Iowa Nutrient Reduction Strategy: Ten Years and No Progress," IEC (2022), available at https://www.iaenvironment.org/webres/File/NRS%20Report%20and%20Recommendations%202022.pdf.
[132] 40 C.F.R. § 131.12(a)(2).

benefits to the community that will occur from any activity resulting in a new or expanded discharge."[133]

Antidegradation analyses regularly compare social and economic factors of the area of a proposed discharge to the average in Iowa. The analyses conclude that if the local area is worse, then it is more susceptible to social and economic disruption than the average town in Iowa. The analyses do not identify impacts to the local community – either socioeconomic benefits or avoided costs – that could possibly justify degradation. The only potential socioeconomic benefit identified in the analyses is avoidance of treatment costs. These do not address the "important economic or social development" that would result by allowing the degradation. To ensure degradation satisfies federal requirements, IDNR may need to strengthen the antidegradation language addressing economic and social importance.

C. Applicants Fail to Consider Reasonable Alternatives

A fundamental component of the antidegradation rule is the alternatives analysis to minimize degradation. Federal regulation requires an alternatives analysis to consider "a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity."[134] In implementing antidegradation procedures, IDNR must "assure the highest statutory and regulatory requirements for existing point sources must be met before allowing any lowering of water quality."[135]

In reviewing recent alternatives analyses, applicants can game the system by limiting the alternatives they consider. Excluding treatment options that would be effective at reducing degradation means the analysis can choose a more-polluting alternative.

This has played out in the antidegradation process for the Ottumwa Midland Landfill. The landfill has a drain with polluted groundwater that Alliant Energy has proposed to discharge. The first antidegradation alternatives considered an on-site treatment option to reduce a range of pollutants. A second antidegradation analysis excluded this from consideration, instead proposing a new treatment option that would reduce only one pollutant.[136] The analysis did not demonstrate that the original treatment option was no longer feasible.

To address this problem, IDNR needs to better define the types of treatment that applicants need to consider in an alternatives analysis.

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[133] "Iowa Antidegradation Implementation Procedure," Iowa DNR (Feb. 17, 2010), at 2, available at https://www.iowadnr.gov/Portals/idnr/uploads/water/standards/files/antideg_2_17.pdf.

[134] 40 C.F.R. § 131.12(a)(2)(ii).

[135] "Iowa Antidegradation Implementation Procedure," Iowa DNR (Feb. 17, 2010), at 4, available at https://www.iowadnr.gov/Portals/idnr/uploads/water/standards/files/antideg_2_17.pdf.

[136] *See* IEC et al., "Comments on the Antidegradation Alternatives Analysis for Interstate Power and Light in Ottumwa, Iowa" (Sept. 5, 2025), available at https://www.iaenvironment.org/webres/File/Joint%20Comments%20on%20Ottumwa%20Underdrain%20Antidegradation.pdf.

D. Applicants Fail to Address Environmental Justice Concerns

Despite the need to identify the important social and economic value of the proposed degradation, applicants have given no consideration to the negative impact of the proposed discharges on downstream communities that may be particularly vulnerable to pollution.

Iowa communities vary widely in their exposure to environmental contaminants. IEC developed a map entitled "Climate Change and Environmental Health in Iowa" to facilitate evaluation of localized environmental risk factors and health outcomes.[137] The map allows users to identify places where increased pollution or increased costs (e.g. water utility costs) would have a disproportionate impact. An antidegradation alternatives analysis should account for these impacts in evaluating whether the important social and economic benefits outweigh the degradation of water quality.

Recent research showed that the effects of nitrate contamination had disproportionate effects on low-income and racial minority populations in the state.[138] Those same communities regularly face increased environmental burdens due to other types of pollution.[139]

IX. Conclusion

Adoption of standards recommended above will advance the fundamental goal of the Clean Water Act to restore the chemical, physical, and biological integrity of waters across the state.[140] IDNR has significant work ahead to align Iowa's water quality standards with the minimum standards recommended by EPA and to protect the waters for use and enjoyment by all Iowans.

Thank you for your consideration of our comments. We look forward to providing input and feedback to IDNR as it moves forward to adopt and implement new water quality standards.

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[137] *Available at* https://arcg.is/0fTPr80 (last accessed Oct. 8, 2025).

[138] Mantey, Emmanuel Padmore, Lu Liu, and Chris R. Rehmann, "Disparities in potential nitrate exposures within Iowa public water systems," *Environmental Science: Water Research & Technology* 11.4 (2025): 959-971.

[139] Cody Smith, "Coal in Siouxland," IEC (May 2024), available at https://www.iaenvironment.org/webres/File/Coal%20in%20Siouxland%20-%20Final%20Report.pdf.

[140] 33 U.S.C. § 1251(a).