PUBLIC PARTICIPATION RESPONSIVENESS SUMMARY
FOR IOWA'S 2006
SECTION 303(d) LIST OF IMPAIRED WATERS

IOWA DEPARTMENT OF NATURAL RESOURCES:
ENVIRONMENTAL SERVICES DIVISION
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INTRODUCTION:

The following constitutes a summary of the comments received in response to Iowa DNR's proposed 2006 Section 303(d) list of impaired waters. Notice of Availability of the draft 2006 list was published on May 3, 2007, in the *Des Moines Register*. In addition, notice of the availability of the list was sent to interest groups and a network of statewide news organizations. Public comments were accepted from May 3 through June 29, 2007.

Comments were provided to the IDNR by seven individuals or organizations (Appendix 1). This document provides a discussion of the issues raised by the comments and how the comments were incorporated into the development of IDNR's final list. IDNR's responses to the comments received are organized by commenter.

IDNR's draft 2006 Section 303(d) list included 274 waterbodies with a total of 356 impairments. Four of the seven commenters proposed addition of waterbodies to Iowa's 2006 Section 303(d) list. Addition of the following three waterbodies was proposed: (1) Dry Creek in Sioux County, (2) Coralville Reservoir in Johnson County, and (3) the Iowa River in Johnson County. These proposed additions were all based on recent (2006 or more recent) observations or data that were collected beyond the time frame considered for Iowa's 2006 Section 303(d) listing cycle (i.e., through calendar year 2004). IDNR's proposed addition of Dry Creek in Sioux County is based on monitoring data generated by the University of Iowa Hygienic Laboratory as part of an IDNR biological monitoring project. Also, the data generated by UHL for Dry Creek, although collected outside the data timeframe for the 2006 impaired waters list, suggest overwhelming evidence of

impairment. Thus, this waterbody will be added to IDNR's final 2006 list of impaired waters. The other two proposed impairments, however, are more appropriate for consideration as candidates for Iowa's 2008 Section 303(d) list.

In addition, U.S. EPA questioned several de-listings proposed by IDNR in their May 2007 draft list. Based on discussions between IDNR and U.S. EPA, seven waterbodies proposed for de-listing were restored to IDNR's final 2006 Section 303(d) list.

1. Bear Creek, waterbody ID: IA 01-UIA-0170_2
2. Lyons Creek, waterbody ID: IA 04-UDM-0215_0
3. Middle Fork South Beaver Creek, waterbody ID: IA 02-CED-432_1
4. Palmer Creek, waterbody ID: IA 02-SHL-00235_0
5. Walnut Creek, waterbody ID: IA 01-WPS-0109_0
6. West Nishnabotna River, waterbody ID: IA 05-NSH-0090_4
7. West Otter Creek, waterbody ID: IA 04-UDM-0253_1

Given these changes to IDNR's draft list, IDNR's final 2006 list of impaired waters (Integrated Report Category 5) includes a total of 282 waterbodies with a total of 365 impairments.

RESPONSES TO COMMENTS RECEIVED:

Commenter 1: Iowa Chapter of the Sierra Club, submitted by Wallace Taylor:

The Iowa Chapter of the Sierra Club provided comments on five aspects of IDNR's draft 2006 list of impaired waters: (1) statutory basis for the 303(d) list, (2) Iowa's methodology, (3) current water quality standards, (4) use designations, and (5) de-listing. These five aspects are addressed separately below. Sierra Club's comments are either quoted directly (in italics) or are paraphrased, and IDNR's responses follow.

1. Sierra Club comments regarding statutory basis for 303(d) list:

The following are excerpts from Sierra Club's comment letter regarding the statutory basis for Section 303(d) listing and how IDNR's draft 2006 list fails to meet these provisions:

> *Pursuant to section 303(d), Iowa must "identify those waters within its boundaries for which the effluent limitations required by [33 U.S.C. § 1311(b((1)(A), B][best practicable control technology (BPT) and pretreatment of waste in publicly owned treatment works] are not stringent enough to implement applicable water quality standards." What this means is that even if water quality standards are attained, the water body must be*

listed unless attainment was or would be accomplished by control technologies or secondary treatment.

This [Sierra Club] *analysis is also consistent with the language of 33 U.S.C. § 1313(d)(4)(B), which clearly contemplates the listing of water bodies "where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards."*

In other words, only those waters for which BPT and secondary treatment are sufficient to attain water quality standards are exempt from 303(d) listing. But this also means that waters that comply with water quality standards are not necessarily exempt from listing. If circumstances other than BPT and secondary treatment are responsible for water quality standards attainment, the water must be listed pursuant to 33 U.S.C. § 1313(d)(1)(A).

This analysis is also consistent with the language of 33 U.S.C. § 1313(d)(4)(B), which clearly contemplates the listing of water bodies "where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards."

Iowa's 2006 303(d) list does not comply with these statutory provisions. Thus, there are innumerable water bodies that should be on the list that are not. In order to address this problem, DNR should start with the 305(b) report and determine if any of the water bodies on that list come within the ambit of § 1313(d)(1)(A) and (B). Only those water bodies that are described in that section would be exempt from listing on the 303(d) list.

IDNR's response to comment on the statutory basis for the 303(d) list.

Sierra Club's comments suggest that Iowa's Section 303(d) list must include all waters in the State, impaired as well as unimpaired, unless it can be shown that point sources subject to NPDES effluent limits are the only source of pollutants for a particular waterbody. Sierra Club also cited two court cases in support of this interpretation: Dioxin/Organochlorine Center v. Clarke, 57 F.3d 1517 (9th Cir. 1995) and Pronsolino v. Nastri, 291 F.3d 1123 (9th Cr. 2002).

Sierra Club's interpretation regarding the listing of waters that are not impaired (i.e., that currently meet state water quality standards) is inconsistent with the intent of Section 303(d) as well as the EPA's implementing regulations and guidance. One of the mainstays of the

Clean Water Act is the requirement that all point sources of pollution meet, at a minimum, the so-called technology-based effluent limits required by 33 U.S.C. § 1311(b((1)(A) and (B), regardless of the condition of the receiving waterbody. It was recognized that some waterbodies still would not meet state water quality standards even after implementation of these technology-based effluent limits. Section 303(d) of the CWA was intended to address these situations by identifying such impaired waterbodies and requiring a plan, in the form of a total maximum daily load (TMDL), that establishes the additional pollutant load reductions needed for the waterbody to meet standards. To suggest that a state's impaired waters list also include all unimpaired waterbodies except for those affected only by pollutants from point sources is contrary to the general intent of Section 303(d). In addition, the IDNR is not aware of any EPA regulation or guidance, legal opinion or case law that supports Sierra Club's views in this regard.

Sierra Club also appears to misinterpret the requirements of 33 U.S.C. § 1313(d)(4)(B). Section 1313(d)(4) deals with the revision of effluent limits for point sources where a TMDL has been completed and, more specifically, 1313(d)(4)(B) addresses the revision of effluent limits for point sources discharging to waterbodies that have previously been listed on the 303(d) list, have had a TMDL calculated, and currently meet standards due to the implementation of the TMDL's load allocation for point sources.

The issues in the cited *Pronsolino* and *Dioxin* cases did not involve whether the waterbodies in question were impaired: they were. The issue in the Pronsolino case was whether a waterbody impaired only by nonpoint sources of pollution had to be listed on the Section 303(d) list of impaired waters (the court ruled it did). The issue in the Dioxin case was whether a waterbody had to be listed when the pollutant causing the impairment was not specifically addressed by the technology-based effluent limits for point sources. The Sierra Club points to certain statements in those decisions in support of their position, but those statements must be read in context of the full decisions. In neither of these cases did the court suggest or opine that Section 303(d) requires the listing of waterbodies that meet all water quality standards.

The IDNR has in the past and continues to include on its list of impaired waters some waterbodies that currently meet state water quality standards but for which data clearly show are declining in quality and thus likely will be considered impaired by the next listing cycle (i.e., threatened waters). This policy is consistent with the general spirit and intent of Section 303(d) of the CWA and, in fact,

EPA guidance suggests such waters be listed. However, this listing policy should be reserved for those waters where data clearly show a declining trend.

To the extent allowed by state law, the IDNR attempts to follow the EPA's guidance for the Integrated Report, including the listing of impaired waters. IDNR suggests that Sierra Club contact EPA directly if they feel that EPA has misinterpreted the intent of Clean Water Act Section 303(d).

2. Sierra Club comments regarding Iowa's methodology:

Sierra Club provided comments on two aspects of IDNR's methodology for Section 303(d) impaired waters listing: (1) placement of waters into Category 4 of the Integrated Report and (2) placement of waters into Categories 2 and 3 of the Integrated Report.

Sierra Club comment regarding Category 4 waterbodies: Sierra Club states that Iowa DNR correctly followed EPA guidance regarding placement of waterbodies into Category 4 of the Integrated Report (i.e., water impaired or threatened but a TMDL is not required). Sierra Club, however, feels that EPA's Category 4 contravenes the intent of Section 303(d) of the Clean Water Act and should thus be eliminated from EPA's guidance to states. That is, Section 303(d)(1)(C) requires TMDLs for the water bodies on the 303(d) list, and Section 303(d)(3) requires that TMDLs be developed for all other waters within the state. Thus, Sierra Club suggests that, according to the statute, there are no water bodies for which TMDLs need not be developed. Therefore, Category 4 of EPA's integrated report format should be deleted.

IDNR Response: As noted in the comment from Sierra Club, IDNR has complied with the EPA's guidance regarding waterbodies placed in Category 4 of the Integrated Report (i.e., impaired but a TMDL is not required). There clearly are some impaired waterbodies for which TMDLs are not required by the CWA. For instance, TMDLs are not required for impaired waterbodies where the imposition of technology-based effluent limits will result in standards attainment. In addition, TMDLs are not required where the impairment is due to non-pollutant causes such as poor habitat as there are no pollutant loads to allocate. IDNR suggests that Sierra Club contact EPA directly if they feel that EPA's guidance for preparation of the Integrated Report is inconsistent with the intent of Section 303(d) of the Clean Water Act.

Sierra Club comments regarding Category 2 and 3 waterbodies: Iowa Sierra Club states that IDNR's placement waters into categories 2 and 3 of the Integrated Report is based on two flaws in the state's methodology for preparation of the Integrated Report: (1) Iowa's credible data law and (2) IDNR's distinction between "evaluated" and "monitored" assessments.

Sierra Club feels that reliance on the credible data law is wrong because the law is illegal and violates federal law through (1) arbitrarily considering data more than five years old to not be credible, (2) arbitrarily considering data collected by anyone other than IDNR, a professional designee of IDNR, or a qualified volunteer not to be credible, (3) not listing waters if the impairment is caused solely by violations of an NPDES permit or stormwater permit, (4) not listing waters if an impairment may be abated by existing effluent limits or other pollution control measures, (5) not requiring that a water assessed as "impaired" for the 305(b) report be placed on the 303(d) list, and (6) preferring numeric over narrative standards. Sierra Club states that EPA acknowledges the credible data law violates the Clean Water Act and EPA regulations because preparation of the 303(d) list is a federal program, and the list must thus comply with the Clean Water Act.

Further, Iowa Sierra Club states that application of the credible data law constitutes a change in the state's water quality standards. That is, recent court proceedings suggested that a Florida law (which Sierra Club views as similar to Iowa's credible data law) appeared to be a modification of Florida's water quality standards which should be subject to review by EPA (the Iowa Sierra Club comment letter devotes approximately two pages to description of the Florida PIRG v. EPA court case). Based on the similarity between the Florida rule challenged by Florida PIRG and Iowa's credible data law, Sierra Club maintains that Iowa's 2006 303(d) list is illegal to the extent that the list is based on the credible data law.

IDNR response regarding use of Integrated Report categories 2 and 3: Sierra Club raises a number of interrelated issues but they all essentially tie back to Iowa's "credible data" law that the Sierra Club maintains is illegal and violates federal law. IDNR's response to the Sierra Club's comments fall into two overarching points. First, the IDNR, as a state agency that was created by an act of the Iowa legislature, must follow state law in doing things such as developing lists of impaired waters. If state law is inconsistent with the provisions of the CWA and implementing EPA regulations and results in a list of impaired waters that is not consistent with the CWA, the EPA has a legal duty to disapprove the list and promulgate one that does meet the CWA requirements. Therefore, Sierra Club's comments regarding the legality of Iowa's credible data law is not germane to IDNR's preparation of the list and should be directed to EPA for their consideration in the review of IDNR's 2006 list. The

IDNR is not aware of any instance where the EPA has acknowledged that Iowa's credible data law violates the Clean Water Act and EPA regulations.

The second point is that IDNR does not believe the credible data law is, in fact, inconsistent with the Clean Water Act. Placing a waterbody on the list of impaired waters carries with it a significant impact including the duty to calculate TMDLs for pollutants and the potential impact on point sources to upgrade treatment facilities. In addition, there is often a public perception that all impaired waters are "highly polluted" and unfit for swimming and fishing. Thus, the decision to list a waterbody as impaired is one that should not be done lightly and should be supported with good, sound data. The credible data law simply helps insure that this is the case.

The credible data law does not prohibit the use of data more than five years old; it simply says the IDNR must justify the use of such older data when it is used as a basis for listing decisions. Waterbodies are dynamic systems and the five year provision of the credible data law simply insures that old, outdated data is not used for listing decisions.

Contrary to Sierra Club's contentions, there is a logical and scientific justification for not considering volunteer monitoring data as credible data for the purpose of listing impaired waters if the volunteer data has not been subject to appropriate quality control and assurance procedures, as would be required for designation as a "qualified volunteer." Periodic review of the monitoring data from "non-qualified" volunteers has revealed a number of concerns as to the data's accuracy. The IDNR does, however, use all volunteer data as a screening tool to identify potentially-impaired waters that then can then be targeted for monitoring that will generate credible data.

The provisions of the credible data law that require impaired waterbodies be omitted from the list of impaired waterbodies if the imposition and enforcement of required pollution control measures such as NPDES permit limits will result in attainment of standards is, IDNR believes, wholly consistent with the spirit and intent of Section 303(d) of the Clean Water Act.

While the credible data law establishes a preference for listing decisions based on compliance with numeric standards versus narrative standards, it does not prohibit the use of narrative standards as a basis of an impaired waters decision. In fact, a number of 2006 listing decisions were made on the basis of non-compliance with narrative standards for such pollutants as nutrients.

Sierra Club points to a Florida case in support of their contention that Iowa's credible data law is illegal. The essence of that case was whether Florida's so-called impaired waters rule (IWR) constituted a change in Florida's state water quality standards. If so, EPA had a duty to review and approve or disapprove the IWR as required by Section 303 of the Clean Water Act. As noted by Sierra Club, the federal appellate court ruled the IWR might constitute such changes to Florida's state standards and remanded the case for further analysis. This case dealt with the procedural aspects of state water quality standards; the court did not suggest or rule the substance of the IWR was contrary to the Clean Water Act's requirements. Subsequent to the remand, the EPA determined that a portion of the IWR did constitute a change in Florida's water quality standards and Florida is taking action to adopt the offending portions of the IWR as state water quality standards that will be submitted to EPA for approval. In the determination on the court's referral for further analysis, the EPA specifically pointed out that a listing policy provision that describes the sufficiency or reliability of information or methodologies such as minimum sample size and age of data requirements (issues that Iowa's credible data law cover) are not water quality standards subject to EPA approval and review. Based on the IDNR's knowledge of the Florida IWR and Iowa's credible data law, the Florida case does not appear to support Sierra Club's contention that Iowa credible data law constitutes a change in Iowa's water quality standards or is in any way "illegal."

The IDNR's distinction between "evaluated" and "monitored" waters also relates to the quality and reliability of the data used for listing decisions and is consistent with the credible data law. "Evaluated" waters are those waters where the assessment of water quality standards attainment is based on water quality information other than current site-specific data, data such as predictive modeling using estimated input values or questionnaire surveys of fish and game biologists. For example, water quality assessments based on results from only a few grab samples or on professional judgment of local biologists, in the absence of any supporting data, are considered "evaluated" assessments. "Monitored" waters are those waterbodies for which the assessment is based on current, site-specific ambient monitoring data meeting relevant quality assurance and control measures. Waters with data from DNR-conducted biological surveys are included in this category along with waters monitored by fixed-station chemical/physical monitoring or toxicity testing.

The IDNR feels the distinction between evaluated and monitored waters is an important one as it addresses the scientific credibility of the data used to assess compliance with water quality standards. Only for "monitored" waters is there a high level of confidence in the assessment and only monitored waters are considered for inclusion on the Section 303(d) list of impaired waters. This approach has been a part of Iowa's assessment and Section 303(d) listing process since the mid-1980s, and IDNR intends to continue to make these distinctions in future 305(b)/303(d) cycles.

3. Sierra Club comments regarding current water quality standards:

Sierra Club comment: The Iowa Environmental Protection Commission approved and adopted revised water quality standards in January of 2006. Iowa's 2006 303(d) list is based on the prior (July 2003) water quality standards. Everyone, including DNR and EPA agree that those prior standards violate the Clean Water Act and EPA regulations. Although EPA has not formally approved the new standards, there is no question that EPA will approve those standards generally, and any modifications as a result of EPA approval will be at least as strict as the standards adopted by the EPC in January of 2006. DNR relies on the proposition that the new standards should not be used until EPA has formally approved them. But, based on the knowledge that EPA will approve them, there is no reason that DNR cannot base the 2006 303(d) list on the new standards. There is no justification for basing the 2006 303(d) list on water quality standards that are acknowledged to be contrary to law and regulations.

IDNR Response: The degree to which previous versions (i.e., those in effect prior to January 2006) of Iowa's Water Quality Standards "violated" the Clean Water Act and/or EPA regulations is debatable as the previous versions were duly approved by EPA, including the July 2003 version used by Iowa DNR as the basis for the 2006 Section 303(d) list of impaired waters. As such, IDNR considers previous versions of the *Iowa Water Quality Standards*, due to their approval at both the state and federal levels, as valid and appropriate for protecting and assessing Iowa's surface water resources.

The use of the EPA-approved July 2003 version of Iowa's water quality standards, versus the newer January 2006 version that has not yet been approved by EPA, is appropriate for several reasons. First, the various use designations and criteria in the July 2003 were the legally adopted standards in effect during the period covered by the 2006 list – the period from 2002 through 2004.

Second, the use of the January 2006 version would create problems for the EPA's review of Iowa's 2006 Section 303(d) list. Both the Clean Water Act

as well as EPA regulations make it clear that state-adopted water quality standards are not effective for the various purposes of the Clean Water Act, including the EPA's review of state-submitted Section 303(d) lists, until such time as the EPA has formally approved the state standards. 40CFR § 131.121 specifically states that: "*A State or authorized Tribe's applicable water quality standard for purposes of the Act remains the applicable standard until EPA approves a change, deletion, or addition to that water quality standard, or until EPA promulgates a more stringent water quality standard.*" Therefore, the EPA, in reviewing Iowa's 2006 Section 303(d) list, is legally required to use the "applicable" water quality standards which are contained in the July 2003 version of Iowa's water quality standards as they have not yet approved the January 2006 changes.

4. Sierra Club comments regarding use designations:

Sierra Club comment: The primary basis for placing a water body on the 303(d) list is that it is not meeting its designated uses. The problem is that Iowa DNR's protocol for use designation is flawed. That protocol unjustifiably downgrades use designations on water bodies. Other commenters will undoubtedly comment on this issue in more detail.

IDNR response: IDNR disagrees that department's the protocol for revising use designations is either flawed or results in unjustifiable downgrades of use designations. Regardless, the issue of how IDNR designates beneficial uses for Iowa surface waters is separate from the processes of Section 303(d) listing. The use designations used as the basis of the assessments for the 2006 Section 303(d) list and Integrated Report are those that were duly adopted by the Environmental Protection Commission and approved by the EPA. No comments from other individuals or groups relative to this issue were received.

5. Sierra Club comments regarding de-listing:

Sierra Club comment: The methodology indicates that a number of water bodies have been de-listed from the 2004 303(d) list. There is no indication, however, as to which water bodies were de-listed or the specific basis for de-listing specific water bodies. It is impossible to evaluate these de-listings without that information.

IDNR response regarding de-listing: The draft list of waters proposed for de-listing for the 2006 Section 303(d) cycle is attached to this responsiveness summary as Appendix 2. IDNR will post a similar listing at the IDNR web site as part of future Integrated Reporting cycles. In addition, IDNR has provided rationales in this responsiveness summary for the proposed de-listing of 41 waterbodies as requested by EPA. Additional

information on the waters proposed for de-listing, along with detailed narratives for all Iowa surface waters assessed for the 2006 Section 305(b)/303(d) cycle, can be found at the following web site: http://wqm.igsb.uiowa.edu/wqa/305b.html.

Commenter 2: Iowa Farm Bureau Federation, Rick Robinson:

The Iowa Farm Bureau Federation (IFBF) provided comments on five aspects of IDNR's draft 2006 list of impaired waters: (1) Iowa's credible data law, (2) relationship of the Integrated Report (IR) Category 5 list to IDNR's methodology, (3) the credible data law's requirement for separate and distinct Section 303(d) and 305(b) reports, (4) use of the trophic state index, and (5) listing issues on atrazine waters. Iowa Farm Bureau Federation's comments are either quoted directly (in italics) or are paraphrased; IDNR's responses follow these comments.

IFBF comments on Iowa's credible data law: IFBF provided four comments on Iowa's credible data law:

IFBF Comment 1 on the credible data law: IFBF continues to support IDNR's application of Iowa's credible data law and sound science to the Section 303(d) listing process. IFBF feels that the credible data law helps target limited resources from both the private sector and the government to waters that have impairments due to known pollutants. Further, IFBF feels that placement of a waterbody on the impaired waters list without use of credible data would more likely be subject to successful legal challenge than the basis of the law itself, especially if subsequent regulations limit land use in the watershed of the alleged impaired waterbody.

> **IDNR Response to IFBF Comment 1 on the credible data law:** IDNR appreciates IFBF's support on use of the credible data law.

IFBF Comment 2 on the credible data law: IFBF suggests that the integrated report contain a special mention of the following facts regarding the credible data law in order to aid the public in their understanding:

> 1. *Iowa requires (Iowa Code §§455B.193-95) the use of credible data when: 1) developing and reviewing water quality standards; 2) determining whether any water of the state shall be placed on or removed from the impaired waters list; 3) determining a TMDL for impaired waters; and 4) determining if a body of water is supporting its designated use, but credible data is <u>not</u> required in determining a designated use.*
>
> 2. *The credible data law in Iowa states that data will not be considered credible unless collected and analyzed by a state or federal agency, a professional contractor hired by the lead agency (Department of Natural Resources) or a qualified volunteer. Data collected and analyzed from a qualified volunteer will only be considered credible if the data is reviewed and approved by the state agency.*

3. *Other important provisions include the requirement that before a TMDL is set for an impaired water, the pollutant that is causing the impairment must be identified. If the pollutant has not been identified, the body of water can be placed on the state impaired waters list but a TMDL will not be calculated. Also, a waterbody will not be placed on the impaired waters list if the impairment is due solely to violations of NPDES permits or storm water permits.*

IDNR response to IFBF Comment 2 on the credible data law: IDNR does not produce a written "integrated report" but rather submits the five categories to U.S. EPA in electronic format. IDNR does, however, include the full text of Iowa's credible data law in its methodology for developing water quality assessments and impaired waters listings [*http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf*]. In addition, IDNR will, as suggested by IFBF, expand the explanation of the credible data in the explanatory text that accompanies the categories of the Integrated Report at the IDNR web site [*http://wqm.igsb.uiowa.edu/WQA/303d.html*].

IFBF Comment 3 on the credible data law: IFBF asks that the department electronically link the entries in the "Data Source" column of Category 5 on the department's web site to the respective data reports, approved quality assurance action plans for qualified volunteers, so that the user may read the supporting information. This transparency will help the public evaluate the data and rationale used for placement on the list and increase public confidence in the department.

IDNR response to IFBF Comment 3 on the credible data law: While IDNR appreciates the need to have a transparent assessment and listing process—and has sincerely attempted to improve this transparency—the suggested links are considered redundant and largely unnecessary. Other than the raw data—which are available either through the Iowa water quality database (STORET [*http://wqm.igsb.uiowa.edu/iastoret/*]) or through Iowa's volunteer water quality database (IOWATER [*http://www.iowater.net/*]—the information requested by IFBF is already available in the IDNR assessment database (ADB+). IDNR staff are in the process of making this database available at the IDNR web site via the internet (i.e., no special database software would be required). Moreover, IDNR staff spend considerable time summarizing and interpreting water quality data as part of the assessment and listing process, and the results of these summaries and interpretations are described, often in considerable detail, in the assessment narratives included for each assessed waterbody in the IDNR assessment database (ADB+). A link to raw data—data that, for the most part, are already available to the public via STORET—would seem to add little in the way of making the assessment/listing process more

transparent. Such a requirement, however, would add yet another step in the already lengthy process of developing and updating water quality assessments for nearly 1,000 Iowa waterbodies for the biennial integrated report.

IFBF Comment 4 on the credible data law: IFBF requests additional information for the following waterbody segments that confirms the use of qualified data sources:

Waterbody ID No.	Waterbody Name	Source of Data
IA 01-NEM-0010_4	Mississippi River	ADM slime studies
IA 01-NEM-0060_1	Duck Creek	Volunteer samples analyzed by Davenport WPC and by UHL
IA 02-IOW-0155_1	Ralston Creek	Coal tar studies in 1995, 1998, and 2001
IA 02-IOW-0161_0	Clear Creek	IDNR/IOWATER snapshot monitoring, September 2003
IA 02-IOW-01615_0	Unnamed tributary to Clear Creek	IDNR/IOWATER snapshot monitoring, September 2003

IDNR response to IFBF Comment 4 on the credible data law: IDNR has provided a the following rationales for the addition of the following four waterbodies to IDNR's draft 2006 list of impaired waters:

Waterbody IA 01-NEM-0010_4, Mississippi River: The following is excerpted from IDNR's assessment narrative for this river segment from IDNR's assessment database (ADB+):

The general uses of this river segment remain assessed as "partially supported" [impaired] *due to the continuing problem with growth of slime in the heavily-industrialized Beaver Slough (river miles 517 to 513) portion of this river reach (see assessment for the 1998, 2000, and 2002 reports). The presence of slime growth on substrates and objects placed in the river (e.g., nets of commercial fishermen) constitutes a violation of Iowa's Class B(WW) aquatic life criteria and the general (narrative) water quality criterion regarding "aesthetically objectionable conditions" and "nuisance aquatic life" as defined in the Iowa Water Quality Standards: (1) all surface waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor, or other aesthetically objectionable conditions; (2) all surface waters shall be free from substances from wastewater discharges or agricultural practices in quantities which would produce undesirable or nuisance aquatic life. Previous and current studies conducted by ADM have shown that the occurrence of slime (tentatively identified as "Leucothrix mucor," a nonphotosynthetic, nonfruiting gliding bacteria) is largely restricted to*

sample sites in Beaver Slough downstream from the ADM facility and that slime does not occur at main channel sites or at sites in Beaver Slough upstream from the ADM facility (Johnson 2001, 2002, 2003). "Slime studies" were conducted in 2000, 2001, and 2002 by ADM (Johnson 2001, 2002, 2003). All studies confirmed (1) that slime growth is confined to Beaver Slough downstream from the ADM facility to Hanson Slough and (2) that, although ADM continues to meet discharge criteria in its current NPDES permit, the ADM facility is the major source of the slime and growth factors that produce slime growths. In addition, both bioassessments conducted as part of the 2000 and 2001 studies indicate that the macroinvertebrate community of Beaver Slough may be adversely affected by the discharges from ADM outfalls (Johnson 2002). Using multiple-plate samplers, petite Ponar dredge, and underwater videotaping, these studies suggested that slime growths are related to decreases in total number of taxa and the percentage of E/P/T (i.e., pollution-intolerant) taxa downstream from ADM outfalls. Also, the population density of zebra mussels (Driessena sp.) was found to decrease downstream from the ADM outfalls. Thus, in addition to the impacts on the warmwater commercial fishery in this river reach, information on macroinvertebrate communities suggests an additional impairment of the Class B(WW) aquatic life uses of Beaver Slough. The 2001 and 2002 slime studies (Johnson 2002, 2003) included attempts to determine the potential sources of slime and/or growth enhancement components within the ADM facility. Future studies will continue to (1) assess slime growth in Beaver Slough and (2) attempt to identify specific sources of the slime problem within the ADM facility. Based on the information in the studies by Johnson (2001, 2002, 2003), the cause and source of impairment listed in previous Section 305(b) reports (organic enrichment/low DO due to unknown source) was changed to an impairment caused by nutrients (i.e., some type of slime growth factor) with industry as the primary source of this impairment.

The studies on the bacterial slime problem are cited in the assessment narrative for this river segment in IDNR's assessment database (ADB+); the citations for these studies are as follows:

Johnson, J.K. 2001. ADM Beaver Slough "slime study 2000": final report. Submitted to Archer Daniels Midland Company, Clinton Corn Plant. 13 pgs. plus figures.

Johnson, J.K. 2002. ADM Beaver Slough "slime study 2001": final report. Submitted to Archer Daniels Midland Company, Clinton Corn Plant. 16 pgs. plus figures.

Johnson, J.K. 2003. ADM Beaver Slough "slime study 2002": final report. Submitted to Archer Daniels Midland Company, Clinton Corn Plant. 20 pgs. plus figures.

Johnson, J.K. 2004. ADM Beaver Slough "slime study 2003": final report. Submitted to Archer Daniels Midland Company, Clinton Corn Plant. 27 pgs. plus figures.

These studies were submitted to IDNR as part of the narrative effluent limitation and water quality monitoring requirements of the NPDES permit for the ADM facility. Electronic copies of these studies are not available, but IDNR can supply hard copies of these studies upon request. IDNR considers the repeated scientific documentation of nuisance growths of slime in this segment of the Mississippi River to constitute violations of Iowa's narrative water quality standards protecting against such conditions. Under IDNR assessment and listing methodology, this river segment was considered to demonstrate overwhelming evidence of impairment.

Waterbody IA 01-NEM-0060_1, Duck Creek: The following is excerpted from IDNR's assessment narrative for this stream segment from IDNR's assessment database (ADB+):

The Class A (primary contact recreation) uses were assessed (monitored) as "not supported" due to high levels of indicator bacteria that routinely violated state water quality standards. The source of data for this assessment is a joint monitoring project conducted in summer 2004 by University of Iowa Hygienic Laboratory (UHL) and the Davenport Water Pollution Control Plant at the following three sample sites: Site DC-12 (upstream of Highway 67, closest to the mouth of Duck Creek); Site DC-11 (near Middle Road in Bettendorf), and Site DC-8 (near Jersey Ridge Road in Davenport). Levels of indicator bacteria were monitored once per week at three stations in this assessment segment from mid-July through mid-October. A total of 14 samples per station were collected during this period; this allows calculation of ten, 30-day/five-sample geometric means for each monitoring station.

According to IDNR's assessment methodology, two conditions need to be met for results of monitoring for indicator bacteria to indicate "full support" of the Class A (primary contact recreation) uses: (1) all five-sample, thirty-day geometric means for the three-year assessment period are less than the state's geometric mean criterion of 126 E. coli orgs/100 ml and (2) not significantly more than 10 % of the samples during any one recreation season exceeds the state's single-sample maximum value of 235 E. coli orgs/100 ml. This assessment approach is based on U.S. EPA guidelines (see pgs 3-33 to 3-35 of U.S. EPA 1997b).

Results of monitoring in this segment of Duck Creek, whether based on data from UHL or from the Davenport Water Pollution Control Plant, suggest impairment of the Class A primary contact recreation uses. For both the UHL and DWPC data, all of the 30-day geometric means at all three monitoring stations exceeded Iowa's Class A criterion of 126 organisms / 100 ml. The following summary is based on results of UHL data. At Station 12, the minimum and maximum geometric means were 375 and 661, with 9 of 14 samples exceeding Iowa's single-sample maximum value of 235 orgs/100 ml. At station 11, minimum and maximum geometric means were 589 and 1,351, with all 14 samples exceeding Iowa's single-sample maximum value. And, at Station 8, , minimum and maximum geometric means were 479 and 928, with all 14 samples exceeding Iowa's single-sample maximum value. According to U.S. EPA guidelines and IDNR's assessment/listing methodology, these results suggest non-support of the Class A (primary contact recreation) uses due to thirty-day geometric means that exceed Iowa's water quality criterion of 126 E. coli organisms/100.

Waterbody IA 02-IOW-0155_1: Ralston Creek: The identification of the impairment of this waterbody was based on results from the following data sources and studies [these studies were conducted for IDNR by the firms indicated]: (1) a 1996 assessment report from CDM Federal that summarizes their August 1995 on-site investigations of Ralston Creek at the Iowa City former manufactured gas plant site, (2) a 1998 report from Ecology and Environment summarizing their on-site investigations of the Iowa City FMGP site, and (3) site characterization report for the Iowa City, Iowa, former manufactured gas plant site prepared by MWH for MidAmerican Energy in November 2001 (revised February 2003). In addition, this impairment was based on photo documentation from a May 17, 2001 visit by Dr. Allen W. Hatheway, PhD, P. Geol., P.E. (retired professor of geological engineering). An explanation of the significance of each of these data sources to identifying the impairment is included in the assessment narrative in IDNR's assessment database (ADB+).

Waterbody IA 02-IOW-0161_0, Clear Creek and waterbody IA 02-IOW-01615_0, unnamed tributary to Clear Creek. The impairments for both these stream segments were not based on water quality data from volunteer monitoring but on overwhelming evidence of impairment due to the discharge of untreated wastewater. This impairment was discovered as part of a volunteer monitoring effort and was confirmed by on-site investigations conducted by IDNR staff. As stated in the assessment narratives for both stream segments in IDNR's assessment database, these segments were assessed as "impaired" due to impacts of poorly and/or untreated wastewater discharged to the headwaters of this stream. This assessment was based on results of the an IDNR/IOWATER "snapshot" monitoring event in September 2003 that showed presence of toilet paper,

floating sewage material, and a strong sewage smell coming from a tile line that discharges to the uppermost reaches of Clear Creek. IDNR staff felt that reports from volunteer monitors, and from IDNR staff from Field Office Six (Washington, IA) and from the IDNR Watershed Monitoring & Assessment Section, were sufficient to demonstrate the occurrence of grossly polluted conditions and, consequently, violations of Iowa's narrative water quality standards protecting against grossly polluted conditions. Under IDNR assessment and listing methodology, both of these stream segments were considered to demonstrate overwhelming evidence of impairment.

IDNR suggests that IFBF's use of the credible data law to challenge IDNR's listings based on grossly polluted conditions could undermine the integrity and intent of the credible data law. That is, if the credible data law is used to prevent IDNR from listing waters with gross pollution problems—such as occur in the above segments of the Mississippi River, Ralston Creek, and Clear Creek and its unnamed tributary—the law may be challenged on the grounds that IDNR has improperly used the law to avoid addressing serious water quality issues in the state. IDNR appreciates the level of scientific rigor that the credible data law brings to the process of adding waters to the impaired waters list. IDNR disagrees, however, that instances of gross pollution that show overwhelming evidence of impairment require IDNR-approved quality assurance/workplans before the affected waterbodies can be considered candidates for Section 303(d) impaired waters listing.

IFBF comments on the relationship of Category 5 [Section 303(d)] list to IDNR's listing methodology: IFBF provided five comments on the relationship of the Category 5 [Section 303(d)] list to IDNR's listing methodology:

IFBF Comment 1 on the relationship of Category 5 list to methodology: threatened waters: Based on an EPA guidance, the DNR has apparently decided to call a waterbody impaired if it shows an adverse trend but is still in good condition. We believe a waterbody needs to be failing to meet the actual water quality standard, not potentially failing to meet a water quality standard to be called impaired.

IDNR Response: U.S. EPA guidance has long-stated—and IDNR has long agreed—that waters that show an adverse water quality trend such that standards are likely to be violated within the next few years are appropriately identified as impaired and are thus candidates for addition to the state's Section 303(d) list of impaired waters. IFBF is incorrect that IDNR has "apparently decided to call a waterbody impaired if it shows an adverse trend but is still in good condition." IDNR has long-considered waters with adverse water quality trends as candidates for Section 303(d)

listing. IDNR has, however, recently changed its approach to identifying "threatened" waters. This recent change is not relevant to Category 5 waters but rather is an issue with Category 1 and 2 (fully supporting) waters. Prior to the 2006 assessment/listing cycle, IDNR identified waterbodies with slight water quality impacts but with no adverse trends as "threatened", and IDNR considered these waters to be fully supporting the assessed uses. IDNR's intention was to provide some distinction between the highest quality waters in Iowa (fully supported/not threatened) and those that continue to meet water quality standards but have minor impacts due, for example, to decades-old channel straightening (fully supported/threatened/no adverse trend). Unfortunately, IDNR was one of the few states, and possibly the only state, still using the "threatened" category to indicate "full support." In order to be more consistent with EPA's national guidance and with other states, IDNR decided to consider all "threatened/no adverse trend" waters as "fully supported" for the 2006 listing cycle. This change in approach to the use of "threatened" waters is explained in IDNR's 2006 assessment/listing methodology in the section on *Changes in methodology since the 2004 reporting/listing cycle [see http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf]*.

IFBF Comment 2 on the relationship of Category 5 list to methodology: basis for impairment of fish consumption use: IFBF states that IDNR uses a protocol revised in 2005 by the Iowa Department of Public Health. Clarification is needed regarding different cutoff dates for data used (2004), the water quality standards applied (July 16, 2003), and use of an updated protocol from 2005 (that went into effect in January 2006).

IDNR response regarding IDNR's fish consumption advisory protocol: IFBF is incorrect in their implication that the Iowa Department of Public Health alone revised the state's fish consumption advisory protocol: IDNR's previous protocol was revised in 2005 by a group composed of both IDNR and IDPH staff.

IDNR response regarding cutoff dates: In general, IDNR has identified cutoff dates that balance the availability of data with the time needed to prepare assessments and recommendations for impaired waters listings. By far, the most time consuming part of the integrated reporting process is summarizing chemical and biological water quality data generated by ambient monitoring networks conducted by IDNR, U.S. Geological Survey, and U.S. Army Corps of Engineers. In addition, these data are not immediately available to states but often become available only after entry into databases and verification for accuracy. For most agencies, data are not available for several months after collection of the samples. Thus, IDNR has identified a cutoff date for chemical data that allows, in effect, approximately one year for the process of summarizing data, comparison to

state water quality standards, and development of water quality assessments and recommendation for impaired waters listings.

IDNR response regarding the version of the water quality standards used for the 2006 listing cycle: In general, the particular version of the *Iowa Water Quality Standards* used for the 2006 listing cycle is tied to cutoff dates used for water quality data or fish consumption advisories. For purposes of Section 305(b) assessments and Section 303(d) impaired waters listings, IDNR's convention has been to use the version of the *Iowa Water Quality Standards* that were in effect during the period of time covered by the reporting cycle. Although this procedure introduces a lag time into the incorporation of new water quality standards into the Section 305(b)/303(d) process, the application of standards effective during the time when data were collected and during the time when conditions are being assessed seems appropriate. Thus, for the 2006 listing cycle, IDNR applied the version of the water quality standards (of July 2003) that was in effect during the 2002-2004 assessment period during which chemical and bacteriological data that were used for assessments and listings were collected.

IDNR response regarding use of the updated (2005) fish consumption advisory protocol for the 2006 listing cycle: IDNR staff made the decision to use the updated advisory protocol for assessing support of fish consumption uses for the 2006 assessment/listing cycle. According to the IDNR assessment/listing methodology, the existence of a fish consumption advisory indicates impairment of the fish consumption uses. Use of the old (pre-2005) advisory protocol would have shown "full support" of fish consumption uses for five of the seven waterbodies covered by advisories. Thus, to be consistent with information at the IDNR web site (*http://www.iowadnr.com/fish/news/consump.html*), and to avoid confusion on this public health issue, the updated protocol was used, and the fish consumption uses of these five waters were assessed as "impaired" and these impairments were added to Category 5 (Section 303(d) list).

IFBF Comment 3 on the relationship of Category 5 list to methodology: Sub-segmenting of Iowa Lakes: IFBF requests that IDNR explain (1) how IDNR determined how to call one area of a lake impaired, (2) how this protocol was established and applied, (3) how lake sub-segmenting works when extended to the TMDL and (4) whether water quality standards are established for sub segments of lakes.

IDNR response regarding how IDNR determined that one area of a lake is impaired: The decision to impair one area of a lake versus another depends on the availability of water quality data from multiple monitoring stations within the same lake. If data from one area of a lake show impairment while data from another area show good water quality, lake sub-

segments can be created. A sub-segment showing impairment will be added to Category 5 of the Integrated Report while sub-segments showing good water quality will be added to non-impairment categories of the Integrated Report (i.e., Categories 1 or 2).

IDNR response regarding how the protocol for sub-segmenting lakes was determined: The decision to create sub-segments at some of Iowa's larger lakes was based on results of monitoring at multiple stations within some of these lakes that showed differing levels of water quality. The need to create sub-segments for lakes is analogous to the need to identify sub-segments of rivers and streams: both approaches are designed to avoid over-extrapolation of results of monitoring. Typically, Iowa lakes are monitored at only one location: the deepest part of the lake (usually near the dam of impoundments). Most often, the results of monitoring at this one station are applied to the entire lake. Relative to the shallower portions of a lake, however, the water quality of the deepest part of a lake can be expected to be better. Thus, the potential exists to over-extrapolate a "fully supported" assessment to regions of the lake with significantly different, and potentially poorer, levels of water quality. Results of beach monitoring at lakes with multiple beaches show the same phenomenon: some beaches may show high levels of indicator bacteria and impairment while monitoring results from other beaches in the same lake may show extremely low levels of bacteria and "full support" of the primary contact recreation uses. Thus, if results from lakes that are monitored at multiple locations show impairments in some portions of the lake and "full support" in other portions, lake sub-segments can be created. Sub-segment boundaries are determined by IDNR staff. To the extent possible, sub-segment boundaries are positioned to correspond to naturally occurring mouths of bays of natural lakes and arms of reservoirs. IDNR staff expect that the number of lakes with sub-segments will increase if data are available from multiple monitoring stations per lake.

IDNR response regarding how lake sub-segmenting extend to TMDLs: Thus far, no TMDLs have been prepared for a lake sub-segment. The application of TMDLs to lake sub-segments, however, would be no different than application of TMDLs to sub-segments of rivers and streams: the TMDL would be developed for, and applied to, the lake sub-segment identified as impaired. In addition, IDNR feels that creation of lake sub-segments and application of the TMDL process to specific lake sub-segments is a superior approach to identifying and addressing lake water quality problems as opposed to forcing a uniform assessment for the entire lake.

IDNR response regarding whether water quality standards are established for sub segments of lakes: The designated beneficial uses that apply to the lake apply to the lake's sub-segments as well. The

application of designated uses to lake sub-segments is entirely analogous the application of designated uses to sub-segments of river or stream segments: the designated uses that apply to the entire segment identified in the *Iowa Water Quality Standards* apply to any sub-segments defined by IDNR staff for the purposes of Section 305(b) water quality assessments and Section 303(d) listings.

IFBF Comment 4 on the relationship of Category 5 list to methodology: modification of the 10 percent rule for identifying impairments: IFBF notes that the 2000 Nebraska guidelines used by IDNR were not provided as part of approved Iowa methodology. In addition, IFBF states that they have a 2006 Nebraska document that seems more applicable. IFBF questions how many waters on the draft list are impacted by the application of the 2000 Nebraska guidelines, and requests the rationale for determining its use as meeting credible data law requirements.

IDNR response regarding modification of the 10 percent rule for identifying impairments: IFBF is incorrect in its statement that Nebraska's 2000 guidelines were used by IDNR as part of the 2006 Section 305(b)/303(d) assessment and listing cycle. As stated in IDNR assessment and listing methodology [*http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf*], the following Nebraska guidance document was consulted regarding their use of the 10 percent rule for identifying violations of water quality criteria:

NDEQ. 2006. Methodologies for waterbody assessments and development of the 2006 integrated report for Nebraska. Nebraska Department of Environmental Quality, Water Quality Division. 21 pgs. plus appendix.

This is the same Nebraska methodology that IFBF suggests is more applicable. IFBF is possibly confused by date of the statistical study (2000) prepared by Florida State University, and used by the state of Nebraska, regarding the 10 percent rule:

Lin, P., D. Meeter, and X. Niu. 2000. A nonparametric procedure for listing and de-listing impaired waters based on criterion exceedances. Technical Report, prepared by Department of Statistics, Florida State University, submitted to the Florida Department of Environmental Protection. 21 pgs.

Thus, because Nebraska's 2000 methodology was not used by IDNR as part of the 2006 assessment/listing cycle, no waters on IDNR's draft Category 5 (Section 303(d) list) were impacted by Nebraska's 2000 methodology. The use of the approach to the 10 percent rule as described

in Nebraska's 2006 methodology—specifically, the approach described by the Department of Statistics at Florida State University in Lin et al. (2000)—did, however, have an impact on the composition of IDNR's draft Section 303(d) list. IDNR staff feel that, given the sometimes small numbers of samples available in some datasets, the Florida approach is superior and more scientifically defensible compared to IDNR's historical use of a simple raw-score percentage for identifying impairments based on the number of violations of a water quality criterion. IDNR does not feel that the discussion of the 10 percent rule has any connection to Iowa's credible data law: data used with the 10 percent rule for identifying impairments were generated by routine, ambient state or federal water quality monitoring programs and are thus considered "credible" under state law.

IFBF Comment 5 on the relationship of Category 5 list to methodology: Data from special studies of water quality and aquatic communities: IFBF notes that the IDNR assessment/listing methodology states that special water quality studies conducted by colleges and universities as part of undergraduate and graduate projects are also sources of water quality data and other water-related information. It should be noted that these studies should meet all intents of the credible data law and not be excused from it. It should not be assumed that they automatically meet the rigorous sampling and data collection requirements. IFBF request that information as to how the department determined these sources meet credible data requirements need to be provided to the public in the responsiveness summary and future listings.

IDNR response regarding use of data from special studies of water quality and aquatic communities: In terms of data from universities or colleges, IDNR used only the following two studies to place waters on IDNR's draft 2006 list of impaired waters: (1) the statewide survey of freshwater mussels conducted by Iowa State University in 1998 and 1999 and (2) the ongoing statewide survey of Iowa lake water quality by Iowa State University that began in 2000 and continues. The references for these two projects are as follows:

Arbuckle, K.E., J.A. Downing, and D. Bonneau. 2000. Statewide assessment of freshwater mussels (Bivalva: Unionidae) in Iowa streams: final report. Iowa Department of Natural Resources.

Downing, J.A. and J.M. Ramstack. 2001. Iowa lakes survey, summer 2000 data. Department of Animal Ecology, Iowa State University, Ames, IA.

Downing, J.A. and J.M. Ramstack. 2002. Iowa lakes survey, summer 2001 data. Department of Animal Ecology, Iowa State University, Ames, IA. 435 pp.

Downing, J.A., J.M. Ramstack, K. Haapa-aho, and K. Lee. 2003. Iowa lakes survey, summer 2002 data. Department of Animal Ecology, Iowa State University, Ames, IA. 394 pp.

Downing, J.A., G. Antoniou, J. Li, D. Kendall, K. Koshatka, and D. Stipp-Bethune. 2004a. Iowa lakes survey, summer 2003 data. Department of Animal Ecology, Iowa State University, Ames, IA.

Downing, J.A., G. Antoniou, J. Li, D. Kendall, and D. Stipp-Bethune. 2004b. Iowa lakes survey, summer 2004 data. Department of Animal Ecology, Iowa State University, Ames, IA.

Both projects were sponsored by IDNR. As such, Iowa State University functioned as a professional designee of IDNR in conducting both projects, and thus the data generated by these projects meet the requirements of Iowa's credible data law. If, in the future, IDNR does use data from any non-IDNR sponsored university projects to add or remove waters from Iowa's Section 303(d) list, IDNR will verify, primarily through review of theses or dissertations, that the data used were collected under a scientifically accepted sampling and analysis plan, including quality control and quality assurance procedures.

IFBF comments on credible data law requirements for separate and distinct 303(d) and 305(b) reports: IFBF notes that the structure of the U.S. EPA's recommended "integrated reporting" format, and IDNR's use of this format, may be problematic in very important ways. For example, Iowa's credible data law requires that Iowa's 305(b) list must be separate from the 303(d) list. IFBF views the integration of these two lists as violating this requirement and advises that IDNR must make certain that it has two separate and distinct lists.

IDNR response regarding requirements to prepare separate 305(b) and 303(d) lists: IDNR does not view preparation of an integrated (305(b)/303(d)) report as violating requirements of Iowa's credible data law. Strictly speaking, Section 305(b) of the federal Clean Water Act does not require preparation of a "list." Rather, Section 305(b) requires states to report on progress in attaining the goals of the act; there is no federal requirement to provide a "list" of 305(b) waters. In contrast, Section 303(d) of the Act does require states to provide to EPA a list of waters that are impaired and in need of a total maximum daily load (TMDL). Thus, Iowa has historically prepared a 303(d) list separate from the 305(b) report. Iowa's Section 303(d) lists have always been a subset of the waters assessed for the purposes of Section 305(b) reporting.

During the development of the credible data law in the 2000 Iowa legislative session, IDNR expressed concerned that all data used for 303(d) listing and 305(b) reporting might need to meet the requirements of the credible data law. IDNR explained the difference between the intents of the these two sections of the Clean Water Act (a more general Section 305(b) summary report versus a very specific Section 303(d) list of impaired waters). IDNR felt that requiring all data to be "credible" would undermine the intent of Section 305(b) to report on general water quality conditions. IDNR's concerns were recognized by the legislators, and thus the following language was included in the legislation: *credible data shall not be required for any section 305(b) report.* This exemption would allow IDNR to use all types of water quality data and related information to better determine and report the status of water quality in the state.

IFBF correctly notes that the credible data law requires that IDNR *shall develop and maintain three separate listings including a section 303(d) list, a section 305(b) report, and a listing for which further investigative monitoring is necessary*. IDNR views its use of U.S. EPA's recommended format for "integrated" 305(b)/303(d) reporting as consistent with these requirements of the credible data law. IDNR's rationale is as follows:

1. The entire integrated report (Categories 1 through 5) can be viewed as the state's 305(b) report. The data from all five categories can be, and have been, used to prepare summary information (e.g., tables and figures) that characterize the status of water quality in the state.

2. IR Category 5 is the state's Section 303(d) list of impaired waters. By placing these waters in a separate category, the 303(d) list can arguably be considered a separate list. Also, because Category 5 is a subset of the entire integrated report, this reporting format is consistent with history of the Section 303(d) list being a subset of the Section 305(b) report.

3. IR subcategories 2b and 3b represent Iowa's list of waters in need of further investigation. EPA guidance states that Category 2 of the integrated report is designed to track waters where some uses are fully supported but sufficient information is lacking to assess the other uses, Category 3 is designed to track waters where insufficient information is available to assess whether any designated uses are being attained. In order to comply with Iowa's credible data law, IDNR created subcategories 2b and 3b to track waters where limited information suggests a potential impairment but for which further investigative monitoring is necessary to better determine whether water quality standards are being attained. U.S. EPA guidance provides for the state-level creation of such subcategories as part of the integrated reporting

process. Thus, IR Categories 2b and 3b serve as Iowa's list of waters in need of further investigation.

Thus, IDNR feels that this framework complies with the requirements of the credible data law to maintain three separate listings.

IFBF comments on IDNR's use of the trophic state index: IFBF expresses two concerns regarding IDNR's continued use of the trophic state index: (1) using the TSI to determine whether a lake is impaired and (2) whether use of the TSI satisfies the credible data test. IFBF states that these concerns are due to limited supporting information from IDNR for the basis of the decision to use TSI values. IFBF also states that TSI values should not be used as a standard due to a lack of credible supporting data. Further, IFBF feels that IDNR is using the TSI to identify overwhelming evidence of impairment where no violation of approved numeric criteria has occurred and, thus, IDNR is inappropriately using TSI values as numeric criteria. IFBF also states that IDNR's use of the TSI does not meet the following requirement in Iowa's credible data law:

Numerical standards shall have a preference over narrative standards. A narrative standard shall not constitute the basis for determining an impairment unless the department identifies specific factors as to why a numeric standard is not sufficient to assure adequate water quality.

IDNR response regarding the lack of supporting information for use of the trophic state index: IDNR has attempted to provide adequate supporting information on the basis for using the trophic state index in the following attachment to IDNR's 2006 assessment/listing methodology: *Attachment 3: The use of the trophic state index to identify water quality impairments in Iowa lakes for the 2006 Section 305(b) reporting and Section 303(d) listing cycles*. The following paragraph from this document summarizes IDNR's rationale for using the trophic state index to identify impairments at Iowa lakes:

> *This lake assessment methodology for Iowa's 2006 integrated (305(b)/303(d)) report involves the use of data from the Iowa State University statewide lake survey with Carlson's (1977) trophic state index (TSI) to identify lakes that do not fully meet the narrative criteria in Section 61.3(2) of the Iowa Water Quality Standards. This general approach was used for Iowa's 2002 and 2004 reporting/listing cycles as well. The existence of any lake impairments suggested by a TSI value will be corroborated by IDNR field (Fisheries Bureau) staff. This approach is consistent with Iowa's credible data law and allows assessment of water quality impacts due to parameters that currently lack numeric criteria in the Iowa Water Quality Standards. The use of TSI values for chlorophyll*

> *and Secchi depth serves as an interim method of assessing lake water quality in Iowa until numeric criteria for nutrient parameters (phosphorus and nitrogen) and their response variables (chlorophyll-a and turbidity) are adopted into the Iowa Water Quality Standards.*

IDNR response regarding the whether use of the trophic state index is consistent with Iowa's credible data law: IFBF asserts that IDNR's use of the trophic state index is in violation of Iowa's credible data law for two reasons: (1) TSI values should not be used as a standard due to a lack of credible supporting data and (2) use of TSI values violates the credible data law requirement that *a narrative standard shall not constitute the basis for determining an impairment unless the department identifies specific factors as to why a numeric standard is not sufficient to assure adequate water quality*.

Regarding the lack of credible supporting data, IDNR maintains that the data used for calculating TSI values meet the requirements of Iowa's credible data law. As stated in IDNR assessment/listing methodology (Attachment 3), the data used to calculate trophic state index values for Iowa lakes are from a statewide water quality survey of 131 Iowa lakes as conducted for the IDNR by Iowa State University. As such, Iowa State University functions as a professional designee of IDNR in conducting this survey, and thus the data generated by this project meet the requirements of Iowa's credible data law.

IDNR response regarding IFBF's concern that IDNR is using the TSI as a numeric criterion: IFBF is concerned that IDNR uses the TSI to identify overwhelming evidence of impairment where no violation of approved numeric criteria has occurred and thus is inappropriately using the TSI as a numeric criterion. IDNR, however, views its use of the TSI as a means of implementing narrative criteria in the *Iowa Water Quality Standards* to identify impairments caused by nutrient or nutrient-related parameters for which numeric criteria do not exist. In addition, IDNR's implementation of narrative criteria for Section 303(d) listing does not rely solely on TSI values but includes independent confirmation that the aesthetically objectionable or nuisance conditions suggested by the TSI values are, in fact, occurring. Any TSI-based impairment proposed for a lake is reviewed by the IDNR Fisheries Biologist responsible for managing the recreational fishery for that lake. If the biologist concurs that either aesthetically objectionable conditions or nuisance aquatic life occur at the lake in question, the lake is assessed as not meeting Iowa's narrative water quality standards, and the nutrient-related impairments identified will be added to Iowa's Section 303(d) list. If, however, the biologist disagrees with the results of the TSI process, the lake is presumed to meet the relevant narrative standards, and the lake will not be added to the Section 303(d) list.

IDNR also feels that IFBF has misinterpreted IDNR's use of TSI with the provision to impair waters based on overwhelming evidence of impairment. IDNR has not used TSI values to demonstrate "overwhelming evidence" of impairment for either the 2004 or 2006 listing cycles. As described in IDNR's listing methodology, the use of the TSI to indicate "overwhelming evidence" of impairment is relevant only for lakes with limited amounts of data (i.e., less than three years of data with at least three summer samples collected per year). If, however, TSI values based on limited data far exceed the respective TSI impairment trigger, IDNR infers that overwhelming evidence of impairment exists, and the lake would thus be considered for addition to the Section 303(d) list. This issue was more prominent during the 2002 listing cycle. Iowa's ambient lake monitoring program began in 2000, and relatively few data existed for the Iowa lakes being assessed for the 2002 listing cycle.

IDNR response regarding the credible data law's preference of numeric versus narrative water quality standards for identifying impairments: IDNR justifies the use the TSI to implement Iowa's narrative standards because the *Iowa Water Quality Standards* do not contain numeric criteria for either nutrient parameters (e.g., total phosphorus or total nitrogen) or for the response variables related to nutrient parameters (e.g., chlorophyll-a and Secchi depth). As stated in IDNR's methodology (Attachment 3),

> the use of the trophic state index *allows assessment of water quality impacts due to parameters that currently lack numeric criteria in the Iowa Water Quality Standards. The use of TSI values for chlorophyll and Secchi depth serves as an interim method of assessing lake water quality in Iowa until numeric criteria for nutrient parameters (phosphorus and nitrogen) and their response variables (chlorophyll-a and turbidity) are adopted into the Iowa Water Quality Standards.*

In addition, without use of the trophic state index or some other method of implementing Iowa's narrative criteria, IDNR has no reasonable method for identifying nutrient-related impacts at Iowa lakes or for utilizing the data on lake water quality collected as part of the IDNR/ISU statewide lake water quality survey that began in 2000 and continues.

IFBF comments on listing issues on atrazine waters: IFBF expresses the following concerns regarding IDNR's listing based on levels of the herbicide atrazine: (1) IDNR appears to have used annual means of atrazine in determining impairments but used the rationale for a "declining water quality trend" to impair one water supply reservoir; this appears to be inconsistent with IDNR's assessment/listing methodology; (2) because EPA will likely soon raise the MCL

for atrazine, it seems appropriate to at least lower the TMDL development priority for atrazine-impaired waters to avoid wasting scarce resources.

IDNR response regarding inconsistent methodologies use to identify atrazine impairments: IDNR's methods for identifying pesticide-related impairments to waters designated as a source of raw water for public water supply (Class C uses) are summarized in Table 10 of the IDNR assessment/listing methodology. As excerpt of this table follows:

Excerpt from Table 10 of IDNR's 2006 Assessment and Listing Methodology: Methods for determining support of classified, beneficial uses for fish consumption, primary contact recreation, and drinking water for surface waters in Iowa for 2006 Section 305(b) reporting and 303(d) listing. "MCL" = maximum contaminant level; "HHC" = human health criteria.

Type of Waterbody	Source of Information	Fully Supported	Fully Supported / Threatened	Partially Supporting	Not Supporting
DRINKING WATER USES					
Waterbodies designated for use as a source of potable water (=raw water source)	ambient monitoring data for toxics	Average levels of toxic metals or pesticides are less than human health criteria (HHC) or maximum contaminant levels (MCLs).	Average levels of toxic metals or pesticides ≤ HHC or MCLs, but the average levels of at least one toxic is trending upward toward its respective HHC or MCL; waterbody is considered "impaired"	[category not used for Section 305(b) reporting]	Average level of toxic metals or pesticides greater than the MCL.

IFBF is correct that IDNR uses average levels of atrazine and other pesticides to determine impairments of Class C (drinking water) uses. As shown in Table 10, however, IDNR also examines temporal trends in pesticide levels to identify waters where the designated drinking water uses are threatened due to adverse trends in pesticide levels. Such waters are assessed as "fully supported/threatened." According to U.S. EPA guidance, "threatened waters" are candidates for Section 303(d) listing. For an explanation of IDNR's use of the "threatened" category, see IDNR's response to the IFBF comment regarding "threatened waters" and the section of IDNR's 2006 assessment/listing methodology on *Changes in methodology since the 2004 reporting/listing cycle* (*http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf*).

IDNR response regarding IFBF's suggestion to lower the TMDL development priority for atrazine-impaired waters due to the potential for an increase in the atrazine MCL in the future: While IFBF makes a valid point regarding the future of the MCL for atrazine, IDNR is obligated to base its impairment decisions on the applicable water quality criteria in the

Iowa Water Quality Standards. Because the Class C (drinking water) criterion for atrazine is the MCL (3 ppb), IDNR will continue to base these impairment decisions on this criterion until any change in the MCL is incorporated into the *Iowa Water Quality Standards*. And, as described in Iowa's assessment/listing methodology, potential human health impacts are used to rank impaired waters as a high priority for TMDL development. Thus, IDNR will continue to consider the atrazine-impaired Class C waters currently used a as sources of public water supplies as having a high priority for TMDL development.

Commenter 3: U.S. EPA Region 7, John Reyna:

U.S. EPA Region 7, citing federal regulations governing the development of the Clean Water Act Section 303(d) list, requested that the Iowa DNR provide further information to demonstrate good cause not to include a water body on the list (40 CFR§130.7(b)(6)(iv)). Good cause includes, but is not limited to, more recent or accurate data; evidence of current condition; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed; or changes in conditions (e.g., new control equipment, or elimination of discharges). Specifically, EPA requested that IDNR provide good cause for the IDNR's proposed de-listing of 41 waters identified in the sections outlined below. EPA grouped these waterbodies by IDNR's May 1, 2007 rationale for de-listing the waterbodies for a specific impairment (see Appendix 2).

EPA comment: IDNR maintains that the following two waterbodies were incorrectly added to the 2004 list by EPA, and were thus moved back to Category 3b of the 2006 Integrated Report by IDNR:

1. **Middle Fork South Beaver Creek (IA 02-CED-0432_1);**
2. **Drainage Ditch 71 (IA 03-SSK-0100_0).**

IDNR Response: Both waters in this de-listing group are general use-only waters. IDNR's decision to place these waters in a non-TMDL category of IDNR's draft 2006 Integrated Report (IR Category 3b) was based on the assessment/listing approach described in Attachment 2 of IDNR's 2006 assessment listing methodology: *Guidelines for determining Section 305(b) aquatic life use support (ALUS) using stream biocriteria sampled data for the 2006 Section 305(b) reporting and Section 303(d) listing cycles*. The following passage from this methodology is the basis for the proposed de-listing of the two waterbodies in this group:

> *The bioassessment indicators* [for determining support of aquatic life uses] *were originally calibrated for assessing support of Class B(LR) and Class B(WW) warmwater aquatic life uses in wadeable stream segments. The indicators were not calibrated for small headwater "General Use" streams or nonwadeable warmwater rivers having watershed drainage areas $\geq$ 500 mi^2. In the absence of specifically calibrated indicators for these types of warmwater lotic systems, the current indicators and criteria have been applied; however, these assessments are considered "evaluated" rather than "monitored" assessments to reflect a greater degree of uncertainty in the assessment conclusions.*

This methodology was developed by IDNR staff that, beginning the early 1990s, developed, designed, and implemented IDNR's biological monitoring program for

fish and aquatic macroinvertebrates in Iowa's wadeable streams and rivers. Because both waterbody segments in this de-listing group are general use-only waters, the assessment of impairment based on results of biological monitoring has a relatively great degree of uncertainty that is more appropriate for a non-TMDL category of the Integrated Report (e.g., IR Categories 2b or 3b). Thus, according to IDNR's assessment/listing methodology, both waterbody segments were placed in IR Category 3b and were placed on Iowa's list of waters in need of further investigation. Based on further review by IDNR staff, one of these waters—Middle Fork South Beaver Creek (IA 02-CED-0432_1)—will remain on IDNR's final 2006 Section 303(d) list. IDNR's expanded rationale for de-listing the second of these two waterbodies (Drainage Ditch 71) in this group is as follows:

> **Drainage Ditch 71, IA 03-SSK-0100_0:** Iowa DNR maintains that addition of this assessment segment to Iowa's 2004 Section 303(d) list was inappropriate due to the difficulty of assessing general use-only waters using biological assessment protocols calibrated to reference conditions in designated use (Class B(LR) and wadeable Class B(WW)) streams. Thus, for the 2006 Integrated Report, IDNR assessed the general aquatic life uses of this stream segment as evaluated and "partially supported" and placed the waterbody in IR Category 3b and on Iowa's list of waters in need of further investigation.

EPA comment: IDNR maintains that the incorrect segment was identified on 2004 list for Iowa River segment IA 02-IOW-0070_2.

IDNR Response: IDNR staff responsible for developing Section 305(b) assessments and Section 303(d) listings make every effort to be accurate in their assessment efforts. Errors do, however, occur, and the de-listing rationale for the waterbody in this de-listing group is based on the discovery of such an error:

> **3. Iowa River, IA 02-IOW-0070_2:** The placement of recent water quality assessments for this segment and the upriver segment (IA 02-IOW-0070_3) have been confused. Because IDNR/UHL ambient monitoring station 10420001 is upstream from the confluence with the South Fork Iowa River--and is thus in segment IA 02-IOW-0070_3--any assessments based on monitoring data from this station should have been applied to IA 02-IOW-0070-3. Thus, any assessments based on data from this station and erroneously placed in this downriver segment (IA 02-IOW-0070_2) have been restored to IA 02-IOW-0070_3. Also, recent assessments for the downriver segment (IA 02-IOW-0070_2) are now considered erroneous, and this segment is now correctly considered "not assessed" due to the lack of monitoring information upon which to base an assessment. For additional information on this assessment, please see IDNR's assessment database (ADB+).

EPA comment: IDNR maintains that segment IA 05 NSH-0020_5 of the East Nishnabotna River was incorrectly listed in 2004 because the drainage area is > 500 sq. mi.

IDNR Response: IDNR's decision to place this segment IA 05-NSH-0020_5 of the East Nishnabotna River in a non-TMDL category of IDNR's draft 2006 Integrated Report (IR Category 3b) is based on the listing approach described in Attachment 2 of IDNR's 2006 assessment listing methodology: *Guidelines for determining Section 305(b) aquatic life use support (ALUS) using stream biocriteria sampled data for the 2006 Section 305(b) reporting and Section 303(d) listing cycles*. The following passage from this methodology is the basis for the proposed de-listing of the one waterbody segment in this group:

> *The bioassessment indicators* [for determining support of aquatic life uses] *were originally calibrated for assessing support of Class B(LR) and Class B(WW) warmwater aquatic life uses in wadeable stream segments. The indicators were not calibrated for small headwater "General Use" streams or nonwadeable warmwater rivers having watershed drainage areas ≥ 500 mi^2. In the absence of specifically calibrated indicators for these types of warmwater lotic systems, the current indicators and criteria have been applied; however, these assessments are considered "evaluated" rather than "monitored" assessments to reflect a greater degree of uncertainty in the assessment conclusions.*

This methodology was developed by IDNR staff that, beginning the early 1990s, developed, designed, and implemented IDNR's biological monitoring program for fish and aquatic macroinvertebrates in Iowa's wadeable streams and rivers. The watershed drainage area of the sample site on the East Nishnabotna River upon which this assessment is based exceeds 500 mi^2. Thus, the assessment of impairment contains a relatively great degree of uncertainty such that this assessment is more appropriate for a non-TMDL category of the Integrated Report. And, according to IDNR's assessment/listing methodology, this waterbody segment has been added to Iowa's list of waters in need of further investigation. IDNR's expanded rationale for de-listing this waterbody is as follows:

> **4. East Nishnabotna River, IA 05-NSH-0020_5:** This assessment was based on data collected in 2002 as part of the DNR/UHL REMAP project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (FIBI) and a benthic macroinvertebrate index (BMIBI). The indexes rank the biological integrity of a stream sampling reach on a rising

scale from 0 (minimum) to 100 (maximum). The 2002 FIBI score was 45 (fair) and the BMIBI score was 43 (fair). The aquatic life use support was assessed as partially supporting (=PS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The FIBI BIC for this ecoregion is 32 and the BMIBI BIC for this ecoregion is 54. This assessment is considered evaluated because the drainage area (789 mi^2) above this sampling site was greater than the maximum limit (500 mi^2) that was used to calibrate the Iowa wadeable stream impairment criteria. **Even though this site passed the FIBI BIC and failed the BMIBI BIC, it is uncertain as to whether or not this segment is meeting the aquatic life criteria because it doesn't fall in the calibrated watershed size** (*emphasis added*)**.**

<u>EPA comment: IDNR maintains that more recent data show lower levels of indicator bacteria, thus justifying de-listing of the following two segments:</u>

5. **Iowa River (IA 02-IOW-0030_2);**
6. **Coralville Reservoir (IA 02-IOW-0040-0_L).**

IDNR Response: IDNR's decision to place remove the bacteria-related impairments at these two waterbody segments is based on the existence of more recent water quality data that indicate full support of the previously impaired designated use. IDNR's rationales for de-listing these two waterbody segments are as follows:

5. Iowa River, IA 02-IOW-0030_2: Results of water quality monitoring at both the UI/ACOE [University of Iowa/Army Corps of Engineers] long-term station near the University of Iowa water treatment plant and the IDNR/UHL station at the Dubuque Street bridge suggest that the Class A uses should be assessed (monitored) as "fully supported." The geometric mean level of indicator bacteria (*E. coli*) in the 18 samples collected as part of UI/ACOE monitoring during recreational seasons of 2002 through 2004 (117 orgs/100ml) is below the Iowa Class A water quality criterion of 126 orgs/100ml. Two of the 18 samples exceeded Iowa's single-sample maximum value of 235 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if levels of *E. coli* exceed the single-sample maximum value in more than 10% of the samples, the primary contact recreation uses should be assessed as "partially supported." According to IDNR's assessment/listing methodology, however, these results do not suggest that the violation frequency of Iowa's single-sample maximum criterion is significantly greater than 10%, and thus these results do not suggest impairment of the Class A uses of this river segment.

Similarly results of IDNR's ambient city monitoring for indicator bacteria also suggest “full support” of primary contact recreation uses. Twenty-four samples were collected upstream from Iowa City at the IDNR/UHL station at Dubuque Street during recreational seasons of 2002 through 2004. The geometric mean of these 24 samples was only 34 *E. coli* orgs/100 ml, well-below the Iowa criterion of 126 orgs/100 ml. Three of the 24 samples had levels of *E. coli* that exceeded Iowa’s single-sample maximum value of 235 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if levels of *E. coli* exceed the state’s single-sample maximum value in more than 10% of the samples, the primary contact recreation uses should be assessed as “partially supported.” According to IDNR’s assessment/listing methodology, however, these results do not suggest that the violation frequency of Iowa’s single-sample maximum criterion is significantly greater than 10% and thus these results do not suggest impairment of the Class A uses of this river segment. The generally low levels of indicator bacteria at the upriver IDNR/UHL station (located approximately 3 miles downriver from Coralville Dam) are consistent with monitoring results at other stations located immediately downriver from Iowa’s federal flood control reservoirs. Typically, these stations show the lowest levels of indicator bacteria of any river monitoring stations in the state. The somewhat higher levels of bacteria at the downriver ACOE monitoring station (approximately 10 miles downriver from Coralville Dam) likely reflect inputs of indicator bacteria potentially in the Iowa River’s intervening tributaries (e.g., Muddy Creek and Clear Creek) and/or from the Iowa City/Coralville urban area.

6. Coralville Reservoir, IA 02-IOW-0040-L_0: Results of water quality monitoring at the UI/ACOE long-term station at the MaHaffey Bridge on the main reservoir suggest that the Class A uses should be assessed (monitored) as "fully supporting." The geometric mean of indicator bacteria (*E. coli*) in the 18 samples collected in the main reservoir in summers of 2002, 2003, and 2004 was 11 orgs/100 ml and was far below Iowa’s geometric mean standard of 126 orgs/100 ml. Also, none of the 18 samples exceeded Iowa’s single sample maximum value of 235 orgs/100 ml (maximum sample value = 40 orgs/100 ml). According to IDNR’s assessment methodology for Section 305(b) reporting, a geometric mean for *E. coli* less than 126 orgs/100 ml, combined with less than 10% of samples exceeding the 235 orgs/100 ml single sample maximum value, suggests “full support” of primary contact recreation uses (see pgs 3-33 to 3-35of U.S. EPA 1997b).

Mean levels of indicator bacteria (fecal coliforms) at all three of the reservoir’s beaches (West Overlook, Sugar Bottom, and Sandy Beach) were well-below the Class A water quality criterion of 126 *E. coli* orgs/100 ml during recreational seasons of 2003 and 2004 period (beach monitoring was not conducted during 2002). None of the combined 15 thirty-day

geometric means (N=5) for each beach during summers of 2003 and 2004 exceeded 126 *E. coli* orgs/100 ml; the maximum thirty-day geometric means were as follows: West Overlook: 47 orgs/100 ml; Sugar Bottom: 31 orgs/100 ml; Sandy Beach: 93 orgs/100 ml. The percentage of individual samples that exceeded Iowa's single-sample maximum criterion (235 orgs/100 ml) were as follows: West Overlook: 0% in 2003; 14% (2 of 14 samples) in 2004; Sugar Bottom Beach: 0% in both 2003 and 2004; Sandy Beach: 11% (1 of 9 samples) in 2003; 15% (2 of 13 samples) in 2004.

According to IDNR's assessment methodology, two conditions need to be met for results of beach monitoring to indicate "full support" of the Class A (primary contact recreation) uses: (1) all five-sample, thirty-day geometric means for the three-year assessment period are less than the state's geometric mean criterion of 126 *E. coli* orgs/100 ml and (2) not more than 10 % of the samples during any one recreation season exceeds the state's single-sample maximum value of 235 *E. coli* orgs/100 ml. This assessment approach is based on U.S. EPA guidelines (see pgs 3-33 to 3-35of U.S. EPA 1997b). All geometric means for the reservoir's beaches were below Iowa's geometric mean criterion of 126 orgs/100 ml. Also, based on IDNR's assessment methodology, the percentage of samples that exceeded Iowa's single-sample maximum criterion of 235 orgs/100 ml was not significantly greater than 10% during the assessment period. According to IDNR's assessment methodology, at least 4 violations in sample sizes from 12 to 14 are needed to demonstrate that significantly more than 10% of the samples exceed the single-sample maximum criterion (with 90% confidence).

EPA comment: IDNR maintains that more recent information from IDNR fisheries (Gritters) suggests improvement in mussel population in Iowa River segment IA 02-IOW-0030_2.

IDNR Response: IDNR's decision to remove the aquatic life impairment for waterbody segment IA 02-IOW-0030_2 of the Iowa River is based on the existence of more recent water quality data that indicate a relatively healthy community of mussels in this river reach. The following is IDNR's rationale for de-listing this segment; this rationale is excerpted from IDNR's assessment database (ADB+):

7. Iowa River, IA 02-IOW-0030_2: The Class B(WW) aquatic life uses are assessed (monitored) as "fully supported" based on results of 2004 survey of freshwater mussels that showed significant recovery of the mussel community in this segment of the Iowa River. The sources of data for this assessment include results of mussel surveys in 2004 coordinated by the IDNR Fisheries Bureau. For the previous (2004) reporting cycle, these aquatic life uses were assessed (monitored) as "partially supported" based

on results of the 1998-99 statewide survey of freshwater mussels. Despite the indications of good water chemical/physical water quality in this segment, results from the 1998-99 statewide assessment of freshwater mussels in Iowa streams had suggested a potential impairment to the aquatic life uses of this stream segment. More recent monitoring, however, suggests improvement in the status of the mussel community in this segment of the Iowa River, thus suggesting that the impairment based on the 1998-99 survey should be removed. The rationale for this assessment is as follows.

As part of a study to reintroduce the endangered Higgins eye mussel [*Lampsilis higginsii*] into the Iowa, Cedar, and Wapsipinicon rivers in eastern Iowa, a four-day mussel search was conducted in August 2004. This survey was coordinated by staff of the IDNR Fisheries Bureau from the Guttenberg and Solon fish management stations. The purpose of the survey was to search for transformed Higgins eye mussels growing in the substrate. In addition to IDNR staff from the Guttenberg and Solon stations, staff from IDNR Fisheries offices in Bellevue, Rathbun, and Manchester also assisted in the effort. Also, volunteers, county conservation boards and three divers from the U.S. Fish and Wildlife Service assisted in the effort. The following is an excerpt from a summary of this study:

> *In total, 54 river stretches were searched by diving, wading, sieving and basket trawling. Nearly 2,400 mussels were collected of 27 species from the three rivers. Particularly impressive was the apparent rebound of the mussel community in the Iowa River at Iowa City. In that reach, 24 species of mussels were collected including some of Iowa's rarer species, the yellow sandshell (Lampsilis teres) and the buckhorn (Tritogonia verrucosa). This may be the last substantial pistolgrip population left in the state of Iowa.*

The 1984 mussel survey of Iowa’s freshwater mussels by Frest included six sample sites in this stream segment. The species richness at these six sites was 5, 5, 13, 10, 7, and 12. In the 1998-99 survey, the corresponding species richness values were 0, 7, 1, 2, 5, and 3, respectively. A comparison of these two surveys showed an average percent change of minus 56% and thus suggested an impairment of the Class B(WW) aquatic life uses (for more information, see the assessment developed for the 2004 reporting cycle). Results of the August 2004 survey, however, suggest improved richness of mussel species that likely exceeds that found during the 1984 survey. Thus, based on this information, the mussel-related impairment of the aquatic life uses of this segment of the Iowa River is removed for the 2006 reporting/listing cycle.

EPA comment: IDNR maintains that more recent data from IDNR & ISU networks show no violations of copper in segments IA 04-RAC-0010_1 and IA 04-RAC-0010_2 of the Raccoon River.

IDNR Response: IDNR's decision to remove the 2004 copper-related aquatic life use impairment for these adjacent waterbody segments of the Raccoon River is based on the existence of more recent water quality data that do not contain violations of copper criteria and thus indicate full support of the previously impaired aquatic life use. The following excerpt from IDNR's assessment database (ADB+) provides details regarding IDNR's proposed de-listing of the two waterbody segments in this group:

> **8 & 9. Raccoon River, IA 04-RAC-0010_1 and Raccoon River, IA 04-RAC-0010_2:** The assessments of support of the beneficial uses of this river segment are based on (1) results of monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) (ISU/ACOE) conducted at ISU/ACOE Station 10 at Van Meter (STORET Station 17250001) as part of the Des Moines River Water Quality Study (see Lutz and Cummings 2003, Lutz 2004, and Lutz et al. 2005), (2) monitoring conducted on the Raccoon River by the Des Moines Water Works during the 2002-2004 assessment period, (3) results of IDNR/UHL ambient city monitoring upstream from Des Moines at Van Meter (station 10250002) during the 2002-2004 assessment period, and (4) results of U.S. EPA / IDNR fish tissue (RAFT) monitoring near Booneville in 1999.
>
> At the IDNR/UHL city station at Van Meter. . . none of the approximately 30 samples analyzed for toxic metals, exceeded Class B(WW) criteria during the 2002-2004 assessment period. This lack of violations of Class B(WW) criteria suggests that the aquatic life uses should be assessed (monitored) as "fully supported". During the previous (2004) assessment period, two of the 28 samples analyzed for toxic metals (7%) during the 2000-2002 monitoring period had exceeded the Class B(WW) chronic criterion for copper. Samples collected on February 15, 2001 and June 13, 2001, both contained 40 ug/l of copper; this level is greater than the Class B(WW) chronic criterion of 35 ug/l. These results suggested only "partial support" of the Class B(WW) uses for the 2004 reporting cycle. Based on the more recent data from the 2002-2004 monitoring period, the assessment of the Class B(WW) uses of this river segment will be changed (upgraded) from "partially supported" to "fully supported" for the 2006 reporting/listing cycle. No violations of Class B(WW) water quality criteria for dissolved oxygen, pH, or ammonia-nitrogen occurred in the approximately 66 samples collected at the ISU/ACOE monitoring station during the 2002-2004 assessment period. In addition, none of the 12 samples analyzed for toxic metals exceeded their respective B(WW) criteria.

EPA comment: IDNR maintains that more recent data from (2002 – 2004) show no ammonia impairment in the following six streams:

10. South Fork Chariton River, IA 05-CHA-0060_1;
11. South Fork Chariton River, IA 05-CHA-0060_2;
12. Jordan Creek, IA 05-CHA-0062_0;
13. Ninemile Creek, IA 05-CHA-0066_0;
14. Honey Creek, IA 05-CHA-0068_0;
15. Wolf Creek, IA 05-CHA-0070_0.

IDNR Response: IDNR's decision to remove the 2004 ammonia-related aquatic life use impairments for these six waterbody segments in the Chariton River basin is based on the existence of more recent water quality data that show improved water quality. The following excerpts from IDNR's assessment database (ADB+) provide details regarding IDNR's proposed de-listing of the six waterbody segments in this group:

10. South Fork Chariton River, IA 05-CHA-0060_1: The assessment of support of the Class B(LR) [aquatic life] uses is based on results of water quality monitoring conducted in 2002, 2003, and 2004 on the South Fork Chariton River near Promise City (station RA-12) by Iowa State University under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. None of the approximately 34 samples violated Class B(LR) criteria for ammonia-nitrogen (maximum level = 1.0 mg/l) or for pH during the 2002-04 assessment period.

11. South Fork Chariton River, IA 05-CHA-0060_2: The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted in 2002, 2003, and 2004 on the South Fork Chariton River near Cambria (station RA-35) by Iowa State University under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. None of the approximately 26 samples violated Class B(LR) criteria for dissolved oxygen, ammonia-nitrogen (maximum level = 0.74 mg/l) or for pH during the 2002-04 assessment period. These results suggest improving water quality conditions in this segment of the South Fork Chariton River.

12. Jordan Creek, IA 05-CHA-0062_0: The assessment of support of the Class B(LR) uses is based on (1) results of water quality monitoring conducted from 2002 through 2004 on Jordan Creek near Bethlehem (station RA-37) by Iowa State University under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project and (2) results of biological monitoring (fish surveys) conducted by the IDNR Fisheries Bureau from 1999-2002. Although none of the 27 samples collected from monitoring station RA-37 during the 2002-04 assessment period violated Class B(LR) criteria for ammonia-nitrogen,

monitoring results for dissolved oxygen and pH show minor violations of Class B(LR) criteria. One of 30 samples collected (3%) at station RA-37 from 2002 through 2004 violated the Class B(LR) water quality criterion for dissolved oxygen: the sample collected on August 13, 2002 contained 4.5 mg/l); this violation occurred just before the stream was reported as “dry” in August 2002. Similarly, one of 30 samples violated the Class B(LR) criterion for low pH: the sample collected on October 19, 2004 had a pH level of 6.3 pH units, and this violates the Class B(LR) criterion of 6.5 pH units. These isolated violations of the criteria for dissolved oxygen and pH do not suggest an impairment: according to U.S. EPA assessment guidelines, if less than 10% of samples exceed state criteria for conventional parameters such as dissolved oxygen and pH, the aquatic life uses should be assessed as "fully supported" (see pgs 3-17 of U.S. EPA 1997b). Although this stream segment has a history of problems with low levels of dissolved oxygen and high levels of ammonia, levels of dissolved oxygen and ammonia over the last six years of monitoring appear to have improved. The violations of Class B(LR) criteria that led to the assessments of impairment occurred in 2000. Since that time, violations of Class B(LR) criteria have been rare. Based on results of recent monitoring, this stream segment does not currently show impairments of the Class B(LR) uses related to either dissolved oxygen or ammonia.

13. Ninemile Creek, IA 05-CHA-0066_0: The assessment of support of [the aquatic life] uses is based on (1) results of water quality monitoring conducted from 2002 through 2004 on Ninemile Creek near Cambria (station RA-36) by Iowa State University/Limnology under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project and (2) results of biological monitoring (fish surveys) conducted by the IDNR Fisheries Bureau from 1999-2002 as part of a DNR Fisheries stream sampling project. None of the approximately 26 samples collected during the 2002-2004 assessment period violated Class B(LR) criteria for ammonia-nitrogen (maximum level = 0.5 mg/l), dissolved oxygen, or pH. These results suggest relatively good water quality and “full support” of the Class B(LR) aquatic life uses.

14. Honey Creek, IA 05-CHA-0068_0: The 2006 assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted from 2002 through 2004 on Honey Creek near Melrose (station RA-40) by Iowa State University under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. None of the 25 samples collected during the 2002-04 period at station RA-40 violated Class B(LR) criteria for ammonia-nitrogen (maximum level = 0.9 mg/l), for dissolved oxygen, or for pH. These results are in contrast to the violations for Class B(LR) dissolved oxygen criteria during the previous assessment period (2000-2002) when monitoring results for dissolved oxygen suggested a potentially significant water quality problem.

Three of the 24 samples (12.5%) collected at station RA-40 from 2000 through 2002 violated the Class B(LR) water quality criterion for dissolved oxygen; all of these violations occurred in the relatively dry year of 2000 and were as follows: June 13: 2.9 mg/l; June 27: 1.9 mg/l; August 15: 4.7 mg/l. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), if criteria for conventional parameters (e.g., pH, dissolved oxygen and temperature) are exceeded in from 11% to 25% of the samples "partial support" of beneficial uses is indicated. Thus, for purposes of the 2004 Section 305(b) reporting cycle, the violation frequency of the Class B(LR) criterion for dissolved oxygen (12.5%) suggested "partial support" of the Class B(LR) aquatic life uses. The lack of violations for dissolved oxygen in the 41 samples collected at Station RA-40 since 2000 suggest improved water quality in this stream segment and the absence of any aquatic life impairments due to low levels of dissolved oxygen.

15. Wolf Creek, IA 05-CHA-0070_0: The assessment of support of the Class B(LR) uses is based on (1) results of chemical/physical water quality monitoring conducted from 2002 through 2004 on Wolf Creek near Chariton (station RA-41; lower segment) and near Humeston (station RA-44; upper segment) by Iowa State University under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project, (2) results of IDNR/UHL biocriteria monitoring in 1999, and (3) results of biological monitoring by the IDNR Fisheries Bureau from 1999-2002. This assessment differs from the previous (2004) assessment ("impaired") due to apparent improvements in water quality conditions over the last four years. None of the 30 samples collected at (downstream) station RA-41 during the 2002-2004 period violated Class B(LR) criteria for ammonia-nitrogen (maximum level = 0.79 mg/l). Two of the 30 samples collected (7%) at station RA-41 from 2002 through 2004 violated the Class B(LR) water quality criterion for dissolved oxygen; these violations occurred just prior to, and just following, a period of dry-weather and no flow in Wolf Creek. These violations are as follows: are as follows: 4.5 mg/l on July 23, 2002; 1.9 mg/l on December 11, 2002. Only one of 30 samples violated the Class B(LR) criterion for low pH (6.5 units). Similarly, one of the 30 samples collected at (upstream) station RA-44 during the 2002-2004 period violated Class B(LR) criteria for ammonia-nitrogen (maximum level = 0.57 mg/l). Three of the 30 samples collected (10%) at station RA-44 from 2002 through 2004 violated the Class B(LR) water quality criterion for dissolved oxygen. Two of these violations were associated with dry-weather low flow conditions in Wolf Creek. These violations are as follows: are as follows: 1.9 mg/l on December 11, 2002; 4.7 mg/l on June 17, 2003, and 4.7 mg/l on June 15 2004. None of 30 samples violated the Class B(LR) criterion for pH at station RA-44. (Note: station RA-44 is within the Class B(LR) segment of Wolf Creek.)

The isolated violations of the criteria for dissolved oxygen and pH that occurred during the 2002-04 period do not suggest an impairment: according to U.S. EPA assessment guidelines, if 10% or less of the samples exceed state criteria for conventional parameters such as dissolved oxygen and pH, the aquatic life uses should be assessed as "fully supported" (see pgs 3-17 of U.S. EPA 1997b). Although this stream segment has a history of problems with low levels of dissolved oxygen and pH, levels of these parameters over the last four years of monitoring appear to have improved. The bulk of the violations of Class B(LR) water quality criteria that led to this waterbody being assessed as impaired occurred in the dry summer of 2000 and were thus likely related to naturally-occurring low flow conditions. Since 2000, violations of the Class (BL) criteria for dissolved oxygen and pH have been relatively rare, although they have continued to be associated with dry weather and low flow conditions. Thus, based on results of recent monitoring this stream segment does not currently show impairments of the Class B(LR) uses related to either dissolved oxygen or pH.

EPA comment: IDNR maintains that more recent data (2001, 2003 & 2004) biological (biocriteria) data show "full support" for three stream segments:

16. Long Creek, IA 02-IOW-0090_2;
17. East Fork Des Moines River, IA 04-EDM-0020_2;
18. West Nodaway River, IA 05-NOD-0100_2.

IDNR Response: IDNR's decision to remove the 2004 biological impairments for the three waterbody segments in this group is based on the existence of more recent biological monitoring data that suggest "full support" of the designated aquatic life uses. The following excerpts from IDNR's assessment database (ADB+) provides details regarding IDNR's proposed de-listing of the three waterbody segments in this group:

16. Long Creek, IA 02-IOW-0090_2: For the 2004 assessment/listing cycle, the Class B(LR) aquatic life uses were assessed as "partially supported" based on results of IDNR/UHL biocriteria monitoring in September 1995. For the 2006 reporting/listing cycle, the Class B(LR) aquatic life uses were assessed (upgraded) as "fully supported" based on results of IDNR/UHL biocriteria monitoring in 2001. This assessment was based on data collected in 2001 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (FIBI) and a benthic macroinvertebrate index (BMIBI). The indexes rank the biological integrity of a stream sampling

reach on a rising scale from 0 (minimum) to 100 (maximum). The 2001 FIBI score was 58 (good) and the BMIBI score was 53 (fair). The aquatic life use support was assessed as fully supporting (= FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The FIBI BIC for this ecoregion is 36 and the BMIBI BIC for this ecoregion is 51.

17. East Fork Des Moines River, IA 04-EDM-0020_2: For the 2004 reporting/listing cycle, the Class B(WW) aquatic life uses were assessed (monitored) as “partially supported” [impaired] based on results of IDNR/UHL biological monitoring conducted in 1997 as part of the stream biorcriteria project. For the 2006 reporting/listing cycle, the assessment was based on data collected in 2003 as part of the DNR/UHL stream biocriteria project. The 2003 FIBI score was 45 (fair) and the BMIBI score was 72 (good). The aquatic life use support was assessed as fully supporting (= FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The non-riffle FIBI BIC for this ecoregion is 32 and the BMIBI BIC for this ecoregion is 62.

18. West Nodaway River, IA 05-NOD-0100_2: For the 2004 reporting/listing cycle, the Class B(LR) aquatic life uses were assessed (monitored) as "partially supported" based on results of IDNR/UHL biological (biocriteria) sampling in 1998. For the 2006 reporting/listing cycle, the Class B(LR) aquatic life uses were assessed (monitored) as "fully supported" based on results of IDNR/UHL biological (biocriteria) sampling in 2002. The aquatic life use support was assessed as fully supporting (= FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report . The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004.

EPA comment: IDNR maintains that more recent data (2002 -2004) show “full support” based on lower levels of indicator bacteria in segment IA 06-BSR-0020_1 of the Big Sioux River.

IDNR Response: IDNR’s decision to remove the 2004 bacteria-related impairments of the Class A (primary contact) uses for this segment of the Big Sioux River is based on the existence of more recent monitoring data that suggest “full support” of the designated Class A uses. The following excerpt from IDNR’s

assessment database (ADB+) provides details regarding IDNR's proposed de-listing of the following waterbody segment:

> **19. Big Sioux River, IA 06-BSR-0020_1:** For the 2006 assessment/listing cycle, the Class A (primary contact recreation) uses are assessed (monitored) as "fully supported" based on results of ambient monitoring for indicator bacteria (*E. coli*) from 2002 through 2004. The source of data for this assessment is the results of monthly ambient water quality monitoring conducted on the Big Sioux River near Hudson, SD, by the South Dakota Department of Environment and Natural Resources (DENR) from 2002 through 2004. The geometric mean level of indicator bacteria (*E. coli*) in the 15 samples collected (37 orgs/100ml) during the recreational seasons of 2002, 2003, and 2004 is well below the Iowa Class A water quality criterion of 126 orgs/100ml. Three of the 15 samples exceeded Iowa's single-sample maximum value of 235 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35of U.S. EPA 1997b), if levels of *E. coli* exceed the single-sample maximum value in more than 10% of the samples, the primary contact recreation uses should be assessed as "partially supported." According to IDNR's assessment/listing methodology, however, these results do not suggest that the violation frequency of Iowa's single-sample maximum criterion is significantly greater than 10%, and thus these results do not suggest impairment of the Class A uses of this river segment. Despite the apparent difference in the current (2006) assessment of support of Class A uses for this river segment ("full support") compared to the assessment for the previous (2004) assessment cycle ("partial support"), both the 2006 and 2004 assessments indicate relatively low levels of indicator bacteria and suggest "full support" of the Class A primary contact recreation uses.

<u>EPA comment: IDNR maintains that more recent data do not indicate impairment due to ammonia in segment IA 06-FLO-0010_0 of the Floyd River.</u>

IDNR Response: IDNR's decision to remove the 2004 ammonia-related aquatic life use impairment for this segment of the Floyd River is based on the existence of more recent water quality data that show improved water quality. Although a single violation of ammonia criteria did occur during the 2002-2004 assessment period, this single violation does not indicate impairment of the designated aquatic life uses. The following excerpts from IDNR's assessment database (ADB+) provide details regarding IDNR's proposed de-listing of the ammonia impairment for this segment of the Floyd River:

> **20. Floyd River, IA 06-FLO-0010_0:** The Class B(WW) aquatic life uses are assessed (monitored) as "not supported" due to violations of state water quality criteria for lead and copper. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring in this river

segment. This assessment is based on results of (1) IDNR monthly (plus) ambient monitoring conducted during the 2002-2004 assessment period at the County Road C-70 bridge north of Sioux City (STORET station 10750001 (formerly station 950110)) and (2) DNR/UHL biological monitoring in 2000 and 2001. Monitoring at the IDNR monthly ambient monitoring station north of Sioux City showed no violations of Class B(WW) water quality criteria for dissolved oxygen or pH in the 46 samples analyzed or for pesticides in the 13 samples analyzed during the 2002-2004 assessment period. **Levels of ammonia-nitrogen and toxic metals, however, did violate the Class B(WW) criteria during the assessment period. One of the 46 samples analyzed contained a level of ammonia nitrogen that exceeded state's pH-dependent chronic water quality criteria for Class B(WW) waters This violation occurred in the sample collected on July 11, 2002; this sample contained 1.9 mg/l of ammonia-nitrogen. According to U.S. EPA guidelines for Section 305(b) reporting, if, for a dataset where at least 10 samples have been collected over a three-year period, no more than one sample exceeds a criterion, aquatic life uses should be assessed as "fully supported" (see pg 3-18 of U.S. EPA 1997). Compared to the previous (2004) assessment period, the conditions related to high levels of ammonia appear to have improved in this segment of the Floyd River. During the 2000-2002 assessment period, three of the 50 samples analyzed violated Class B(WW) criteria for ammonia-nitrogen, thus indicating impairment of the Class B(WW) uses** (emphasis added; see assessment developed for the 2004 assessment cycle for more information)**.**

<u>EPA comment: IDNR maintains that biological monitoring subsequent to a fish kill in segment IA 02-SHL-0023_0 of Coldwater Creek shows "full support."</u>

IDNR Response: IDNR's decision to remove the 2004 fish kill-related aquatic life use impairment for this segment of Coldwater Creek is based on the existence of biological monitoring data collected subsequent to the kill that shows "full support" of the designated aquatic life uses. The following excerpt from IDNR's assessment database (ADB+) provides details regarding IDNR's proposed de-listing of this waterbody segment:

21. Coldwater Creek, IA 02-SHL-0023_0: For the 2006 assessment/listing cycle, the Class B(LR) aquatic life uses are assessed (monitored) as "fully supported" based on results of IDNR/UHL biological monitoring conducted in 2002 as part of the stream biocriteria project. Sources of data for this assessment include (1) results of IDNR/UHL biological monitoring conducted in August 2002 as part of the stream biocriteria project and (2) report of a fish kill that occurred on July 12, 2002. This assessment was based on biological data collected in August 2002 as

part of the DNR/UHL stream biocriteria project. The aquatic life use support was assessed as fully supporting (=FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. A fish kill occurred in this stream segment on July 12, 2002. The kill affected 6 miles of this stream; an estimated 39,000 fish were killed. No cause was determined, but the investigator stated that the kill did not result from natural causes. According to IDNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates ongoing impairment of the aquatic life uses. However, the biological sampling was conducted in the same segment following the fishkill and the results indicated "full support" of aquatic life uses. Thus, the more recent data were used as the basis for the assessment of “full support” of the Class B(LR) aquatic life uses.

EPA comment: IDNR maintains that biological data previously use to assess support of, and to identify impairment in, segment IA 02-IOW-0090_1 of Long Creek were collected in the adjacent upstream segment.

IDNR Response: IDNR staff responsible for developing Section 305(b) assessments and Section 303(d) listings make every effort to be accurate in their assessment efforts. Errors do, however, occur, and the de-listing rationale for the waterbody in this de-listing group is based on the discovery of such an error. IDNR’s rationale for de-listing the waterbody segment of Long Creek is as follows:

22. Long Creek, IA 02-IOW-0090_1: Biological data used in previous assessments were collected from IA 02-IOW-0090_2; assessments based on these data can be found under that segment.

EPA comment: IDNR maintains that biological data previously used to assess support, and to identify impairment of segment IA 04-UDM-0375_0 of Prairie Creek were collected in the adjacent, general use, upstream segment.

IDNR Response: IDNR staff responsible for developing Section 305(b) assessments and Section 303(d) listings make every effort to be accurate in their assessment efforts. Errors do, however, occur, and the de-listing rationale for the waterbody in this de-listing group is based on the discovery of such an error. IDNR’s expanded rationale for de-listing the waterbody segment of Prairie Creek is as follows:

23. Prairie Creek, IA 04-UDM-0375_0: Previous assessments for waterbody segment IA 04-UDM-0375_0 used biological data that were inappropriate for assessment completion: the biological data were collected in IA 04-UDM-0376_0 and can be found there. This general use-only

segment was not added to Iowa's 2006 Section 303(d) list due to lack of a biological assessment protocol for small headwater (general use-only) streams. This approach is described in Attachment 2 of IDNR's 2006 assessment listing methodology: *Guidelines for determining Section 305(b) aquatic life use support (ALUS) using stream biocriteria sampled data for the 2006 Section 305(b) reporting and Section 303(d) listing cycles*. The following passage from this methodology is the basis for the rationale to not list general use-only stream segments:

> *The bioassessment indicators* [for determining support of aquatic life uses] *were originally calibrated for assessing support of Class B(LR) and Class B(WW) warmwater aquatic life uses in wadeable stream segments. The indicators were not calibrated for small headwater "General Use" streams or nonwadeable warmwater rivers having watershed drainage areas $\geq$ 500 mi^2. In the absence of specifically calibrated indicators for these types of warmwater lotic systems, the current indicators and criteria have been applied; however, these assessments are considered "evaluated" rather than "monitored" assessments to reflect a greater degree of uncertainty in the assessment conclusions.*

EPA comment: IDNR maintains that biological data previously used to assess support of, and to identify impairment in, segment IA 06-LSR-0310_0 of the West Fork Little Sioux River was not collected in this segment.

IDNR Response: IDNR staff responsible for developing Section 305(b) assessments and Section 303(d) listings make every effort to be accurate in their assessment efforts. Errors do, however, occur, and the de-listing rationale for the waterbody in this de-listing group is based on the discovery of such an error. IDNR's expanded rationale for de-listing the waterbody segment of West Fork Little Sioux River is as follows:

> **24. West Fork Little Sioux River, IA 06-LSR-0310_0:** The 1996 biological data used for previous assessments for this segment were not collected in this segment but were collected in a segment of the Little Sioux River (IA 06-LSR-0040_3) [note: this segment of the Little Sioux River is on IDNR's draft 2006 Section 303(d) list]. Thus, the 1996 biological data used to identify the impairment of the Class B(LR) uses in segment IA 06-LSR-0310_0 for Iowa's 2004 Section 303(d) list were incorrectly applied. This segment is considered "not assessed" for the 2006 IR cycle.

EPA comment: IDNR maintains that the following two waterbody segments of Walnut Creek (waterbody IA 05-NSH-0010) should be de-listed based on re-calculation of IBI values from the 1998 IDNR Fisheries Bureau sampling:

25. Walnut Creek, IA 05-NSH-0100_1
26. Walnut Creek, IA 05-NSH-0100_2

IDNR Response: IDNR's decision to remove the 2004 biological impairments of the aquatic life uses for these two segments of Walnut Creek is based on the use of an "uncertainty adjustment value" (UAV) for the 2006 assessments that was not applied to the 2004 assessments. The following excerpt from Attachment 2 of IDNR's 2006 assessment listing methodology (*Guidelines for determining Section 305(b) aquatic life use support (ALUS) using stream biocriteria sampled data for the 2006 Section 305(b) reporting and Section 303(d) listing cycles*) describes the UAV:

> *An uncertainty adjustment value (UAV) equal to 8 BMIBI points or 7 FIBI points is applied in cases where single sample data are used to assess aquatic life use support status. The UAV reflects the typical year-to-year IBI scoring variation observed among least disturbed reference sites throughout Iowa. It is used to identify stream segments that are within a reasonable margin of error from the lower 25th percentile of reference site IBI scores and may be considered a higher priority for follow-up sampling in order to better determine the status of aquatic life uses.*

In addition, IDNR continues to maintain that the bioassessment data generated by the IDNR Fisheries Bureau for these assessment segments lacked the necessary documentation or metadata to determine whether the data meet quality and completeness criteria required of higher confidence (i.e., "monitored") assessments that IDNR considers appropriate for Section 303(d) listing. Thus, the assessment type was considered of lower confidence (i.e., "evaluated"), and thus these "partially supported" waterbody segments were considered not appropriate for Section 303(d) listing. IDNR's expanded rationales for de-listing these segments are as follow:

25. Walnut Creek, IA 05-NSH-0100_1: The application of the UAV to the IBI value for this segment shows full support of the designated aquatic uses for the 2006 listing cycle. Thus, IDNR proposed that this segment be de-listed. Note: the UAV was not applied in the 2004 assessment for this segment. Had, however, it been applied, the 2004 assessment would have shown full support and the waterbody would not have been identified as impaired. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

26. Walnut Creek, IA 05-NSH-0100_2: The application of the UAV to the IBI value for this segment shows full support of the designated aquatic uses for the 2006 listing cycle. Thus, IDNR proposed that this segment be de-listed. Note: the UAV was not applied in the 2004 assessment for this segment. Had, however, it been applied, the 2004 assessment would have

shown full support and the waterbody would not have been identified as impaired. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

EPA comment: IDNR maintains that the following four waterbody segments should be de-listed based on re-calculation of IBI values based on (1998 &1999) biocriteria sampling:

27. **Nutting Creek, IA 01-TRK-0416_0;**
28. **Bear Creek, IA 02-IOW-0180_1;**
29. **Fourmile Creek, IA 04-LDM-0320_1;**
30. **Walnut Creek, IA 04-RAC-0020_1.**

IDNR Response: The proposed de-listing of three of the four streams in this group is based on re-calculation of IDNR's biological impairment criteria (BICs) used with IBI values to determine the degree to which aquatic life uses are supported. Prior to the 2006 listing cycle, IDNR's biological impairment criteria were based on results of stream reference site sampling conducted from 1994 through 2001. For the 2006 listing cycle, results of reference site sampling from 2002 through 2004 were added to the 1994-2001 data to update the BICs. Additional explanation of the re-calculation procedure is provided in IDNR's 2006 assessment and listing methodology (IDNR 2007) in the addendum entitled Establishment of Biological Impairment Criteria (BIC) for Determining Support of Warmwater Stream Aquatic Life Uses (see *http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf*). The application of the re-calculated BIC to the four stream segments in this group show "full support" of the designated aquatic life uses. The proposed de-listing for the fourth stream segment in this group is based on correction of an assessment error that resulted in the listing of segment IA 04-RAC-0020_1 of Walnut Creek in 2004. IDNR's expanded rationales for the de-listings of these four segments are as follow:

27. Nutting Creek, IA 01-TRK-0416_0: The Class B(LR) aquatic life uses are assessed (evaluated) as "fully supported" based on results of IDNR/UHL biological (biocriteria) sampling in 1999. This is an upgrade to the assessment from the 2004 assessment of partial support. In addition, 2006 biological data (outside of the data window) indicate that this segment is fully supporting its aquatic life uses. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

28. Bear Creek, IA 02-IOW-0180_1: The Class B(LR) aquatic life uses are assessed (evaluated) as "fully supporting" based on results of

IDNR/UHL biological (biocriteria) sampling in 1999. These data are now too old to be considered for a monitored assessment and as such this assessment is considered evaluated because of data age [Note: the age of data has no bearing on the decisions to de-list this waterbody segment.] The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. This site met the FIBI BIC and BMIBI BIC (using the UAV +8). For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

29. Fourmile Creek, IA 04-LDM-0320_1: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information upon which to base an assessment. The Class B(LR) aquatic life uses are assessed (evaluated) as "fully supported" based on results of IDNR/UHL biological (biocriteria) sampling in 1999. The 1999 FIBI scores upstream from the Ankeny WWTP were 38 (fair) and 37 (fair) and the BMIBI scores were 69 (good) and 74 (good). Downstream from the Ankeny WWTP, the FIBI scores were 30 (fair) and 24 (poor) and the BMIBI scores were 49 (fair) and 55 (fair). The overall FIBI average was 32 and the BMIBI average was 62. The aquatic life use support was assessed (evaluated) as Fully Supporting (=FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The non-riffle FIBI BIC for this ecoregion is 32 and the BMIBI BIC for this ecoregion is 62. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

30. Walnut Creek, IA 04-RAC-0020_1: This de-listing is not based on the recalculation of BIC values as stated by EPA. The comparison of the BMIBI score to the BIC for the 2000 cycle, upon which the original impairment was based, was an assessment error: the sample did not meet IDNR quality assurance objectives for a monitored (high confidence) assessment. Therefore, this de-listing is a result of an assessment error being caught and corrected in 2006. The following is a summary of the 2006 assessment from IDNR's Section 305(b)/303(d) assessment database (ADB+).

> The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information upon which to base an assessment. The Class B(LR) aquatic life are assessed (evaluated) as "fully supported" based on results of biological monitoring conducted in 1998 as part of the IDNR/UHL stream biocriteria project. The 1998 FIBI score was 48 (fair) and not enough data was available to calculate the BMIBI score. The aquatic life use support was assessed as fully supporting (=FS), based on a comparison of the FIBI score with biological impairment criteria (BIC) established for Section 305(b) reports. The biological impairment criteria were

determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The FIBI BIC for this ecoregion is 36.

For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

EPA comment: IDNR maintains that the following three waterbody segments should be de-listed based on re-calculation of IBIs based on 2000 IDNR/UHL biocriteria sampling:

31. **Lytle Creek, IA 01-NMQ-0050_2;**
32. **Yellow River, IA 01-YEL-0080_3;**
33. **East Branch West Nishnabotna River, IA 05-NSH-0140_1.**

IDNR Response: The proposed de-listing of the three streams in this group is based on re-calculation of IDNR's biological impairment criteria (BICs) used with IBI values to determine the degree to which aquatic life uses are supported. Prior to the 2006 listing cycle, IDNR's biological impairment criteria were based on results of stream reference site sampling conducted from 1994 through 2001. For the 2006 listing cycle, results of reference site sampling from 2002 through 2004 were added to the 1994-2001 data to update the BICs. Additional explanation of the re-calculation procedure is provided in IDNR's 2006 assessment and listing methodology (IDNR 2007) in the addendum entitled Establishment of Biological Impairment Criteria (BIC) for Determining Support of Warmwater Stream Aquatic Life Uses (see *http://wqm.igsb.uiowa.edu/WQA/303d/2006/draft_2006_Methodology.pdf*). The application of the re-calculated BIC to biological data from the three stream segments in this group show "full support" of the designated aquatic life uses. IDNR's expanded rationales for the de-listings of these three segments are as follow:

31. Lytle Creek, IA 01-NMQ-0050_2: [Note: The Class B(LR) aquatic life uses are not assessed for the 2006 assessment/listing cycle: biological sampling data previously used for assessing this segment were used inappropriately; the sampling data were actually collected in IA 01-NMQ-0050_1 and can be found there.] IDNR/UHL biological sampling in 1999 suggest that this segment is fully supporting its aquatic life uses. The assessment was based on data collected in 1999 as part of the DNR/UHL stream biocriteria project. The 1999 FIBI score was 38 (fair) and the BMIBI score was 46 (fair). The aquatic life use support was assessed [evaluated] as fully supporting (=FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites

from 1994-2004. The FIBI BIC for this ecoregion is 36 and the BMIBI BIC for this ecoregion is 51. This segment passed both the FIBI BIC and BMIBI BIC (with the aid of the UAV +8). For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

32. Yellow River, IA 01-YEL-0080_3: For the 2006 assessment/listing cycle, the Class B(LR) aquatic life uses of this stream segment are assessed (evaluated) as "fully supported" based on data collected in August 2000 as part of the IDNR/UHL stream biocriteria project. The 2000 FIBI score was 51 (good) and the BMIBI score was 60 (good). The aquatic life use support was assessed (evaluated) as fully supporting (= FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The FIBI BIC for this ecoregion is 52 and the BMIBI BIC for this ecoregion is 61. According to IDNR methodology, if both the FIBI (7) and BMIBI (8) scores need to have the uncertainty adjustment value (UAV) applied to meet the BICs, the assessment is considered evaluated. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

33. East Branch West Nishnabotna River, IA 05-NSH-0140_1: The Class B(LR) aquatic life uses are assessed (monitored) as "fully supported" based on results of IDNR/UHL biological (biocriteria) sampling in 2000. This is an upgrade to the assessment that was developed for the 2002 reporting cycle (partially supported). This assessment was based on data collected in 2000 approximately 4.5 miles northeast of Avoca as part of the DNR/UHL stream biocriteria project. The 2000 FIBI score was 35 (fair) and the BMIBI score was 46 (fair). The aquatic life use support was assessed as fully supporting (= FS), based on a comparison of the FIBI and BMIBI scores with biological impairment criteria (BIC) established for the 2006 Integrated Report. The biological impairment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-2004. The FIBI BIC for this ecoregion is 31 and the BMIBI BIC for this ecoregion is 54. The FIBI score was higher than the FIBI BIC and the BMIBI score plus the UAV (8) was equal to the BMIBI BIC. For additional information on this assessment, please consult IDNR's Section 305(b)/303(d) assessment database (ADB+).

EPA comment: IDNR maintains that the following five waterbody segments should be de-listed because no fish kill was reported in at least 3 years; thus IDNR moved these waters to a non-TMDL category (IR Category 3b):

34. **Palmer Creek, IA 02-SHL-00235_0:**
35. **Lyons Creek, IA 04-UDM-0215_0:**
36. **West Otter Creek, IA 04-UDM-0253_1:**
37. **West Nishnabotna River, IA 05-NSH-0090_4:**
38. **Otter Creek, IA 06-BSR-072_0:**

IDNR Response: Based on EPA concerns, IDNR will leave four of the five waterbodies in this group in Category 5 of Iowa's 2006 Integrated Report (i.e., Iowa's 2006 Section 303(d) list). The fifth waterbody segment in the group (Otter Creek, IA 06-BSR-0072_0), however, was not proposed for de-listing for the 2006 IR cycle. This segment was on Iowa's 2004 Section 303(d) list and shall remain on IDNR's final 2006 Section 303(d) list (IR Category 5). The following four waterbodies on Iowa's 2004 Section 303(d) list will thus remain on IDNR's final 2006 list:

34. **Palmer Creek, IA 02-SHL-00235_0:**
35. **Lyons Creek, IA 04-UDM-0215_0:**
36. **West Otter Creek, IA 04-UDM-0253_1:**
37. **West Nishnabotna River, IA 05-NSH-0090_4:**

EPA comment: IDNR maintains that the following two waterbody segments should be de-listed because no fish kill was reported over the last six years; thus IDNR considered these waters as "not assessed" and moved them to a non-TMDL category (IR Category 3a):

39. **Bear Creek, IA 01-UIA-0170_2:**
40. **Walnut Creek, IA 01-WPS-0109_0:**

IDNR Response: Based on EPA concerns, IDNR will leave the two waterbodies in this group in Category 5 of Iowa's 2006 Integrated Report (i.e., Iowa's 2006 Section 303(d) list).

EPA comment: IDNR maintains that improving water clarity in Green Valley Lake (IA 05-PLA-00295-L) based on trophic state index (TSI) values of less than 60 for chlorophyll-a and Secchi depth suggest "full support."

IDNR Response: IDNR's decision to remove the 2004 impairment for Green Valley Lake was based on the existence of more recent monitoring data from 2003 and 2004 that suggested improved water quality and "full support" of the designated uses of this lake. An examination of more recent data from 2005 and 2006, however, suggests that levels of chlorophyll-a at this lake remain above the trophic state index impairment level of 65. In 2005, the TSI value for this lake was 69 and in 2006 was 67. Based on

IDNR's 2006 assessment and listing methodology, both of these more recent TSI values suggest continued impairment at this lake. Thus, IDNR will include Green Valley Lake on its final 2006 Section 303(d) list.

Commenter 4: Tom Woodruff: Fish kill on Coralville Reservoir:

Mr. Woodruff reported a fish kill in Coralville Reservoir in Spring (April) 2007 that was visible after ice-out on the reservoir. He reported "at least 50" catfish carcasses ranging up to 48" in length. The kill was observed along the west bank of the reservoir in an area locally known as Indian Cove, a part of the former Camp Daybreak; this area is approximately one-half mile down reservoir from the Lake MacBride Dam. Mr. Woodruff attributed the cause of the kill to the continued silting-in of the reservoir and the contaminants in the decreasing food supply on the river bottom.

> **IDNR Response:** This kill occurred beyond the period (2002 through 2005) during which IDNR considered fish kill reports for purposes of Section 305(b) water quality assessments and Section 303(d) listings for the 2006 assessment/listing cycle. IDNR will consider this kill when developing the water quality assessment for Coralville Reservoir for the 2008 Integrated Report and Section 303(d) list.

Commenters 5 and 6: Evan De Groot, along with Joe Skoda, and Melissa O'Rourke: Dry Creek, Sioux County:

Mr. De Groot questioned why was this stream not on the 2006 list. He referred to water quality data for Dry Creek collected in 2006 and 2007, and he noted occurrence of low levels of dissolved oxygen (from zero to 1 ppm) in the upper portion of this creek. Also, Mr. De Groot accompanied the University of Iowa Hygienic Lab on an IDNR-requested fish survey of this stream near Hawarden during which no fish were found. He cited historical reports of abundant fish life in this stream.

Mr. De Groot hypothesizes that the lack of fish is due to a severe fish kill coupled with the presence of an erosion control structure near Hawarden that prevents movement of fish upstream and thus is preventing re-colonization of the stream. Mr. De Groot also suggests that high levels of bacteria justify addition of this stream to the list of impaired waters.

> **IDNR Response:** This waterbody (segment IA 06-BSR-0035_0) was assessed as evaluated/impaired for the 2006 Section 305(b)/303(d) cycle and was placed on IDNR's draft 2006 list of waters in need of further investigation (IR Category 3b). This assessment was based on biological data collected in 2004 as part of the IDNR/UHL REMAP biological monitoring project. Because this is a general use-only stream, and because IDNR does not have assessment protocols that are calibrated for general use-only streams, this stream impairment was not added to IDNR's draft Section 303(d) list but was instead added to Iowa's list of waters in need of further investigation. The 2006 and 2007 chemical and biological data referred to by Mr. De Groot were collected beyond the period (2002 through 2004) during which IDNR considered results of chemical and biological monitoring for purposes of the 2006 Integrated Report and Section 303(d) list.
>
> Following further review of this assessment, and following a review of the IDNR/UHL biological data from 2006 and 2007, IDNR now considers this segment of Dry Creek impaired and will add this segment to IDNR's final 2006 Section 303(d) list (IR Category 5). IDNR/UHL biological data generated after the 2006 assessment period indicate severe water quality problems in this stream segment that suggest overwhelming evidence of impairment.

Commenter 7: William Curran, Iowa City, IA: (1) quality of the Iowa River downstream from Iowa City and (2) high nitrate levels in the Snyder Creek watershed:

1. Mr. Curran commented that the quality of the Iowa River downstream from the Iowa City wastewater treatment plant seems to vary with water level: during low-flow conditions, the water appears cleaner. At higher flow conditions, there are "grayish-brown clouds" in the river and rocky substrates become coated with a brown slime. Mr. Curran further states that he has caught and eaten fish from this segment of the Iowa River that have a taste and smell similar to the wastewater discharged from the treatment facility.

> **IDNR Response:** The segment of the Iowa River from its confluence with the English River upstream to the Burlington Street Bridge Dam in Iowa City (IA 02-IOW-0030_1) was assessed as impaired for the 2006 Integrated Reporting cycle and was thus added to IDNR's draft 2006 Section 303(d) list (IR Category 5a). The impairment of the aquatic life uses in this segment is based on results of the statewide survey of freshwater mussels that showed significant declines in the diversity of freshwater mussel from 1985 to 1998. Results of ambient water quality monitoring at the IDNR ambient station downstream from Iowa City near Hills, IA, from 2002 through 2004, however, continue to suggest good water quality. IDNR will consider the possibility that discharge from the Iowa City wastewater treatment plant may adversely influence the diversity of freshwater mussels in this segment of the Iowa River. Fish contaminant monitoring was conducted in this river segment in 2001 and 2003 as part of the U.S. EPA's Regional Ambient Fish Tissue (RAFT) monitoring program. Levels of all contaminants were below all advisory trigger levels; thus, fish consumption uses were assessed as "fully supported."

2. Mr. Curran further notes that wetlands he enrolled three years ago in the Wetland Reserve Program in the Snyder Creek watershed are about 20% covered with moss. He feels that this moss is due to high levels of nitrate in the runoff water coming from the eastern portion of the Iowa City urban area.

> **IDNR Response:** IDNR certainly appreciates Mr. Curran's concern for water quality and his participation in the Wetland Reserve Program. IDNR, however, does not consider privately-owned lakes or wetlands, such as the wetland in the Snyder Creek watershed, as candidates for Section 303(d) impaired waters listing. Further investigation would be necessary to determine the nature of the potential impairment identified by Mr. Curran (i.e., "moss") and the role of nitrate in that potential impairment.

References

Carlson, R.E. 1977. A trophic state index for lakes. Limnol Oceanogr. 22:361-369.

IDNR. 2007. Methodology for Iowa's 2006 water quality assessment, listing, and reporting pursuant to Sections 305(b) and 303(d) of the federal Clean Water Act. Watershed Monitoring and Assessment Section, Iowa Department of Natural Resources. 115 p.

Lutz, D.S. 2004. Annual report: water quality studies--Red Rock and Saylorville reservoirs, Des Moines River, Iowa. December 3, 2002—December 3, 2003. Environmental Engineering Section, Department of Civil Engineering, and the Engineering Research Institute, Iowa State University, Ames, Iowa. 351 p.

Lutz, D.S. and M.R. Cummings. 2003. Annual report: water quality studies--Red Rock and Saylorville reservoirs, Des Moines River, Iowa. December 4, 2001—November 2, 2002. Environmental Engineering Section, Department of Civil Engineering, and the Engineering Research Institute, Iowa State University, Ames, Iowa. 347 p.

Lutz, D.S, B.C. Francois, and T.D. Lechtenberg. 2005. Annual report: water quality studies--Red Rock and Saylorville reservoirs, Des Moines River, Iowa. January 7, 2004—December 6, 2004. Environmental Engineering Section, Department of Civil Engineering, and the Engineering Research Institute, Iowa State University, Ames, Iowa. 368 p.

U.S. EPA. 1997. Guidelines for the preparation of the comprehensive state water quality assessments (305(b) reports) and electronic updates. Assessment and Watershed Protection Division, Office of Wetlands, Oceans, and Watersheds, Office of Water, U.S. Environmental Protection Agency, Washington, D.C.

Appendix 1. Persons and agencies providing comments on IDNR's draft 2006 Section 303(d) list of impaired waters:

Commenter	Affiliation / Location	Issue / Comment:
Wallace Taylor	Iowa Chapter Sierra Club, Cedar Rapids, IA	(1) statutory basis for the 303(d) list, (2) Iowa's methodology, (3) current water quality standards, (4) use designations, and (5) de-listing.
Rick Robinson	Iowa Farm Bureau Federation, West Des Moines, IA	(1) credible data, (2) relation of IR Category 5 to IDNR methodology, (3) separate and distinct 303(d) and 305(b) reports, (4), use of trophic state index, (5) listing issues on atrazine waters
John Reyna	U.S. EPA Region 7, Kansas City, KS	request more information on de-listing rationales for 41 waters
Evan De Groot	Sioux County, IA	Dry Creek, Sioux County
Joe Skoda & Melissa O'Rourke	Rock Valley, IA	Dry Creek, Sioux County
Tom Woodruff	Iowa City, IA	Coralville Reservoir fish kill
William Curran	Iowa City, IA	(1) Iowa River downstream Iowa City, (2) Snyder Creek watershed, Johnson County

Appendix 2. Impairments proposed for de-listing from Iowa's 2004 final/EPA-approved IR Category 5 (=Section 303(d) list) in May 2007. Category 5 waters are those impaired by a pollutant and in need of a TMDL (i.e., the state's Section 303(d) list). Category 5a waters are those for which the cause of impairment known; Category 5b waters are those for which the cause of impairment unknown. Waterbodies are listed hydrologically by major basin and by subbasin (I.e., by waterbody ID number).

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 01-NMQ-0050_2	Lytle Creek	from Buncombe Cr. to Dubuque Co. tributary	aquatic life	biological (potentially includes habitat alterations and/or siltation)	low biotic index	IDNR/UHL biocriteria	Not impaired based on re-calculation of IBI based on results of 2000 biocriteria sampling.
5b	IA 01-TRK-0416_0	Nutting Creek	mouth to Fayette Co. tributary	aquatic life	biological	low biotic index	IDNR/UHL biocriteria sampling, 1999	Not impaired based on re-calculation of IBI based on 1999 biocriteria sampling.
5b	IA 01-UIA-0170_2	Bear Creek	from N. Bear Cr. to Mestad Spring (Winneshiek Co.)	aquatic life	biological	runoff-related fish kill; no cause or source identified	IDNR fish kill investigation	Most recent fish kill occurred more than 6 years ago
5a	IA 01-VOL-0010_1	Volga River	mouth to Cox Cr. near Mederville (Clayton Co.)	primary contact	indicator bacteria	geometric mean > WQ criterion	IDNR/UHL ambient WQ & TMDL monitoring	TMDL approved: moved to IR Category 4a.
5a	IA 01-VOL-0010_2	Volga River	from Cox Cr. to bridge crossing in Volga (Clayton Co.)	primary contact	indicator bacteria	geometric mean > WQ criterion	IDNR/UHL TMDL monitoring	TMDL approved: moved to IR Category 4a

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 01-WPS-0109_0	Walnut Creek	mouth to White Oak Cr. (Jones Co.)	aquatic life	biological (fish kill due to ammonia and organic enrichment/low DO: source biological)	fish kill in 1999 caused by feedlot runoff	IDNR fish kill investigation	Most recent fish kill occurred more than 6 years ago
5b	IA 01-YEL-0080_3	Yellow River	from N. Fk. Yellow R. to Winneshiek Co. tributary	aquatic life	biological (potentially includes habitat alterations and/or siltation)	low biotic index	IDNR/UHL biological monitoring in 2000	Not impaired based on re-calculation of IBI based on 2000 biocriteria sampling
5a	IA 02-CED-0370_1	Black Hawk Creek	from mouth (Black Hawk Co.) to Hwy 58 at Hudson	primary contact	indicator bacteria	geometric mean > WQ criterion	IDNR/UHL ambient WQ monitoring, 2002-04	TMDL approved; moved to IR Category 4a.
5b	IA 02-CED-0432_1	Middle Fork South Beaver Creek	mouth to Grundy Co. tributary 4 mi. NW Wellsburg	general use	biological (potentially includes organic enrichment/low DO and/or siltation)	low biotic index	IDNR/UHL biological monitoring	Incorrectly added to the 2004 list; moved back to 3b
5a	IA 02-IOW-0030_2	Iowa River	from Burlington St. dam to Coralville dam	primary contact	indicator bacteria	geometric mean > WQ criterion	IDNR/UHL ambient (city) WQ monitoring, 2002-04	More recent (2002-04) data show lower levels of indicator bacteria and "full support."

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 02-IOW-0030_2	Iowa River	from Burlington St. dam to Coralville dam	aquatic life	biological (potentially includes flow alteration, habitat modification, nutrients, and/or siltation)	> 50% decline in mussel species richness from 1985 to 1998	ISU freshwater mussel study	More recent information from IDNR Fisheries suggest improvement in mussel population.
5a	IA 02-IOW-0040-L_0	Coralville Reservoir	entire reservoir	primary contact	indicator bacteria	geometric mean > WQ criterion	UI/ACOE beach monitoring	More recent (2002-04) data show lower levels of indicator bacteria and "full support."
5a	IA 02-IOW-0070_2	Iowa River	from Hardin/Marshall line to S. Fk. Iowa R.	primary contact	indicator bacteria	> 10% of samples > 400 orgs / 100 ml	IDNR/UHL ambient WQ monitoring, 2002-04	Incorrect segment identified on 2004 list; should have been IA 02-IOW-0070-3
5b	IA 02-IOW-0090_1	Long Creek	mouth to unnamed tributary SSE Columbus City	aquatic life	biological	low biotic index	IDNR/UHL biocriteria sampling, 1995	Biological data previously use to assess support, and to identify impairment, was collected the adjacent upstream segment, IA 02-IOW-0090-2.
5b	IA 02-IOW-0090_2	Long Creek	from unnamed tributary to N line, S3, T74N, R5W	aquatic life	biological	low biotic index	IDNR/UHL biocriteria sampling, 1995	More recent (2001) biological data show "full support."

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 02-IOW-0180_1	Bear Creek	from mouth to L. Bear Cr. (Poweshiek Co.)	aquatic life	biological	low biotic index	IDNR/UHL biocriteria sampling, 1999	Not impaired based on re-calculation of IBI based on 1999 biocriteria sampling
5b	IA 02-SHL-0023_0	Coldwater Creek	mouth to unnamed tributary in Cerro Gordo Co.	aquatic life	biological	fish kill in 2002	IDNR fish kill investigation in July 2002; IDNR/UHL biological monitoring in August 2002	New data: biological monitoring subsequent to fish kill shows "full support"
5b	IA 02-SHL-00235_0	Palmer Creek	mouth to headwaters (Butler Co.)	aquatic life	ammonia	fish kill in 2000	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.
5b	IA 02-SHL-00235_0	Palmer Creek	mouth to headwaters (Butler Co.)	aquatic life	organic enrichment/low DO	fish kill in 2000	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.
5a	IA 02-SHL-00295-L_0	Silver Lake	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lakes survey, 2000-02; information from IDNR Fisheries.	TMDL approved in 2006; moved to IR Category 4a.
5a	IA 02-SHL-00295-L_0	Silver Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lakes survey, 2000-02; information from IDNR Fisheries.	TMDL approved in 2006; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 02-WFC-0090-L_0	Beeds Lake	entire lake	primary contact	indicator bacteria	geometric mean > WQ criterion	IDNR/UHL beach monitoring	TMDL approved in 2006; moved to IR Category 4a.
5a	IA 02-WIN-00450-L_0	Clear Lake	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries	TMDL approved in 2005; moved to IR Category 4a.
5a	IA 02-WIN-00450-L_0	Clear Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries	TMDL approved in 2005; moved to IR Category 4a.
5a	IA 02-WIN-00465-L_0	Ventura Marsh	entire wetland	aquatic life	exotic species	common carp prevent growth of wetland vegetation through increased turbidities	Information from IDNR Fisheries Bureau	Non-pollutant stressor: waterbody incorrectly placed in Category 5 for 2004 cycle; moved to IR Category 4c.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 03-SSK-00360-L_0	Little Wall Lake	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 03-SSK-00360-L_0	Little Wall Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5b	IA 03-SSK-0100_0	Drainage Ditch 71	mouth to Rahto Branch and Loop Branch ditches	general use	biological (potentially includes habitat alterations; source biological)	low biotic index in 1997	Results of IDNR fish kill investigation; IDNR/UHL biological sampling in 1997	Incorrectly added to the 2004 list; moved to 3b (general use water)
5b	IA 04-EDM-0020_2	East Fork Des Moines River	Prairie Cr. to tributary S. of Armstrong, Emmet Co.	aquatic life	biological (potentially habitat alterations and/or siltation)	low biotic index	IDNR/UHL biocriteria sampling, 1997	More recent (2003) biological (biocriteria) data show "full support."
5a	IA 04-EDM-00290-L_0	Tuttle Lake (a.k.a. Okamanpee dan Lake)	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
							Fisheries Bureau	
5a	IA 04-EDM-00290-L_0	Tuttle Lake (a.k.a. Okamanpeedan Lake)	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-00150-L_0	Indian Lake	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-00150-L_0	Indian Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-00215-L_0	Ottumwa Lagoon	entire lake	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
							Bureau	
5a	IA 04-LDM-00215-L_0	Ottumwa Lagoon	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey, 2000-02; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-00215-L_0	Ottumwa Lagoon	entire lake	fish consumption	chlordane	> FDA action level	ISU statewide lake survey; fish contaminant (RAFT) monitoring	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-00490-L_0	Easter Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey; information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 04-LDM-01995-L_0	Williamson Pond	entire lake	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5b	IA 04-LDM-0228_0	Camp Creek	mouth (Marion Co.) to unnamed tributary, Polk Co.	aquatic life	biological (potentially includes habitat alterations)	low biotic index	IDNR/UHL biological monitoring in 1999 and 2001	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 04-LDM-0320_1	Fourmile Creek	mouth to Co.Rd. bridge (First Street, Ankeny), Polk Co.	aquatic life	organic enrichment/low DO	low biotic index	IDNR/UHL biological monitoring in 1999	Not impaired based on re-calculation of IBI based on 1999 biocriteria sampling
5a	IA 04-LDM-0340_0	Yeader Creek	upper end Easter L. to headwaters (at Des Moines International Airport)	aquatic life (general use)	priority organics	de-icers from DMIA in stream; aquatic community in poor condition	1997 IDNR assessment; 1999-2002 monitoring by DMI Airport; IOWATER data from 2000-01	TMDL approved; moved to IR Category 4a.
5a	IA 04-RAC-0010_1	Raccoon River	mouth to the Polk/Dallas county line	aquatic life	copper	violations of chronic WQ criterion	IDNR/UHL ambient (city) WQ monitoring, 2002-04	More recent (2002-04) data from IDNR & ISU networks show no violations of copper
5a	IA 04-RAC-0010_2	Raccoon River	Polk/Dallas co. line to confluence of N & S raccoon rivers	aquatic life	copper	violations of chronic WQ criterion	IDNR/UHL ambient (city) WQ monitoring, 2002-04	More recent (2002-04) data from IDNR & ISU networks show no violations of copper
5b	IA 04-RAC-0020_1	Walnut Creek	mouth to Interstate 35/80, Polk Co.	aquatic life	biological (potentially includes habitat alterations)	low biotic index	IDNR/UHL biological monitoring in 1998	Not impaired based on re-calculation of IBI based on 1998 biocriteria sampling

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 04-RAC-00530-L_0	Storm Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 79; Chl-a trophic state index = 58.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-RAC-00805-L_0	Spring Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 69; Chl-a trophic state index = 53.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-UDM-01020-L_0	Silver Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: Chl-a trophic state index = 73.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-UDM-01020-L_0	Silver Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 83.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5b	IA 04-UDM-0215_0	Lyons Creek	mouth (at Webster City) to headwaters	general use	biological	fish kill in 2001. Although traced to tile line, no cause/source identified.	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 04-UDM-02290-L_0	Lake Cornelia	Wright County, Section 16 T92N R24W	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-UDM-02290-L_0	Lake Cornelia	Wright County, Section 16 T92N R24W	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5b	IA 04-UDM-0253_1	West Otter Creek	mouth to Wright-Hancock county line	general use	biological	Fish kill in 2000; pollutant suspected but no cause/source identified.	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.
5b	IA 04-UDM-0375_0	Prairie Creek	mouth to Palo Alto Co. tributary	aquatic life	biological	low biotic index	IDNR/UHL biological (biocriteria) monitoring	Biological data previously use to assess support, and to identify impairment, was collected the adjacent, general use, upstream segment, IA 04-UDM-0376-0.
5a	IA 04-UDM-03850-L_0	Five Island Lake	Palo Alto County at Emmetsburg	primary contact	algae	aesthetically objectionable conditions	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-UDM-03850-L_0	Five Island Lake	Palo Alto County at Emmetsburg	primary contact	turbidity	aesthetically objectionable conditions	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 04-UDM-03985-L_0	Ingham Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi and Chl-a trophic state indexes >70.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 04-UDM-03985-L_0	Ingham Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: Secchi and Chl-a trophic state indexes >70.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 05-CHA-0060_1	South Fork Chariton River	mouth (at Rathbun Lake) to Ninemile Cr.	aquatic life	organic enrichment/low DO	3 of 10 samples (30%) violated DO WQS	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5a	IA 05-CHA-0060_2	South Fork Chariton River	from Ninemile Creek to dam of Bob White Lake	aquatic life	organic enrichment/low DO	3 of 26 sample (12%) violated DO WQS	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5a	IA 05-CHA-0062_0	Jordan Creek	mouth to unnamed tributary 2.5 mi. ESE Millerton	aquatic life	ammonia	Violations of ammonia WQS (3) in 27 samples	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment due to ammonia.
5a	IA 05-CHA-0062_0	Jordan Creek	mouth to unnamed tributary 2.5 mi. ESE Millerton	aquatic life	organic enrichment/low DO	Violations of DO WQS (4) in 27 samples	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5a	IA 05-CHA-0066_0	Ninemile Creek	mouth to unnamed tributary	aquatic life	organic enrichment/low DO	Violations of DO WQS (3 in 26 samples)	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5a	IA 05-CHA-0068_0	Honey Creek	mouth (at Rathbun Lake) to unnamed tributary (Lucas Co.)	aquatic life	organic enrichment/low DO	Violations of DO WQS (12% of samples)	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 05-CHA-0070_0	Wolf Creek	mouth (Lucas Co.) to unnamed tributary in Wayne Co.	aquatic life	pH	24% of samples violated (low) pH WQS	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5a	IA 05-CHA-0070_0	Wolf Creek	mouth (Lucas Co.) to unnamed tributary in Wayne Co.	aquatic life	organic enrichment/low DO	24% of samples violated DO WQS	ISU/Rathbun watershed project	More recent (2002-04) data do not indicate impairment.
5b	IA 05-NOD-0100_2	West Nodaway River	From Threemile Cr. to Whislers Branch, Cass Co.	aquatic life	biological (potentially including, habitat alterations, turbidity, and/or siltation)	low biotic index	IDNR/UHL biological (biocriteria) monitoring in 1998	More recent (2004) biological (biocriteria) data show "full support."
5b	IA 05-NSH-0020_5	East Nishnabotna River	from Montgomery/Cass co. line to Indian Cr. near Lewis	aquatic life	biological (potentially includes habitat alterations)	low biotic index		Incorrectly listed in 2004: drainage area > 500 sq.mi.
5a	IA 05-NSH-00220-L_0	Pierce Creek Pond	entire lake	primary contact	exotic species	impacts of common carp on water quality	information from IDNR Fisheries Bureau	TMDL approved; moved to IR Category 4a.
5a	IA 05-NSH-00220-L_0	Pierce Creek Pond	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 72 (Chl-a trophic state index= 62).	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5a	IA 05-NSH-00675-L_0	Littlefield Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 69.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 05-NSH-00675-L_0	Littlefield Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: Chl-a trophic state index = 69.	ISU statewide lake survey, 2000-04	TMDL approved; moved to IR Category 4a.
5b	IA 05-NSH-0090_4	West Nishnabotna River	from Crawford-Carroll Co. line to tributary NE of Manning	general use	biological (fish kill due to ammonia and organic enrichment/low DO: source biological)	fish kill in 2001; caused by animal waste; no source identified.	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.
5b	IA 05-NSH-0100_1	Walnut Creek	mouth to unnamed tributary 4 mi NW of Red Oak, Montgomery Co.	aquatic life	biological	low biotic index	information from IDNR Fisheries Bureau	Not impaired based on re-calculation of IBI based on 1998 IDNR Fisheries Bureau sampling
5b	IA 05-NSH-0100_2	Walnut Creek	from tributary NW of Red Oak to tributary SSE of Walnut	aquatic life	biological	low biotic index	information from IDNR Fisheries Bureau	Not impaired based on re-calculation of IBI based on 1998 IDNR Fisheries Bureau sampling

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 05-NSH-0140_1	East Branch West Nishnabotna River	mouth to confluence with Prairie Rose outlet, Shelby Co.	aquatic life	biological (potentially includes siltation)	low biotic index	IDNR/UHL biological (biocriteria) monitoring in 2000	Not impaired based on re-calculation of IBIs based on the 2000 IDNR/UHL biocriteria sampling
5a	IA 05-PLA-00295-L_0	Green Valley Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: chlorophyll-a trophic state index > 65.	ISU statewide lake survey, 2000-04	Improving water clarity (chl-a and Secchi TSIs ≤ 60) suggest "full support"
5a	IA 06-BSR-0020_1	Big Sioux River	from Rock R. to Beaver Cr. near Canton, SD & Beloit, IA	primary contact	indicator bacteria	> 10% of samples > 400 orgs / 100 ml	South Dakota ambient WQ monitoring	More recent data (2002-04) show "full support" based on indicator bacteria.
5b	IA 06-BSR-0072_0	Otter Creek	from unnamed tributary at Sibley to IA/MN state line	general use	biological (fish kill attributed to ammonia and organic enrichment/low DO: source unknown)	fish kill in 2001; 2001 kill caused by animal waste; no source identified.	IDNR fish kill investigation	Most recent fsh kill occurred more than 3 years ago; moved to IR Category 3b.
5a	IA 06-FLO-0010_0	Floyd River	mouth to W. Br. Floyd R. near Merrill (Plymouth Co.)	aquatic life	ammonia	Three of 50 samples > chronic WQS	IDNR/UHL ambient WQ monitoring, 2002-04	More recent (2002-04) data do not indicate impairment due to ammonia.
5b	IA 06-FLO-0080_0	Little Floyd River	mouth (Sioux Co.) to Lamkin Cr. SW of Sheldon	aquatic life	biological (potentially includes organic enrichment/low DO and/or	low biotic index	IDNR/UHL biological monitoring in 1999, 2001, and 2002.	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
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5a	IA 06-LSR-02450-L_0	Trumbull Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: chlorophyll-a trophic state index = 80.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 06-LSR-02450-L_0	Trumbull Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 87.	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 06-LSR-02870-L_0	Little Spirit Lake	entire lake	primary contact	algae	aesthetically objectionable conditions: chlorophyll-a trophic state index = 66	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.
5a	IA 06-LSR-02870-L_0	Little Spirit Lake	entire lake	primary contact	turbidity	aesthetically objectionable conditions: Secchi trophic state index = 70	ISU statewide lake survey	TMDL approved; moved to IR Category 4a.

2004 IR Category	Waterbody ID Number	Waterbody Name	Segment Description	Designated Use Impaired	Cause / Stressor for 2004 303(d) list	Rationale for 303(d) listing, 2004 cycle:	Data Source	Rationale for Section 303(d) de-listing
5b	IA 06-LSR-0310_0	West Fork Little Sioux River	mouth to IA/MN state line	aquatic life	biological	low biotic index	IDNR/UHL biological (biocriteria) monitoring in 1996	Biological data previously use to assess support, and to identify impairment, was not collected in this segment.