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Part II

Environmental Protection Agency

40 CFR Part 131
Water Quality Standards Regulation; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 131

[FRL–0W–6118–9]

RIN–2040–AC56

Water Quality Standards Regulation

AGENCY: Environmental Protection Agency.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: EPA is today publishing this advance notice of proposed rule making (ANPRM) seeking comments from interested parties on possible revisions to the Water Quality Standards Regulation at 40 CFR Part 131. This ANPRM is intended to initiate discussions on what if any changes are needed in the national water quality standards program to improve the effectiveness of water quality standards in restoring and maintaining the quality of the Nation's waters. EPA will consider all comments before deciding whether to propose revisions to the regulation. EPA is particularly interested in comments on certain key portions of the current Water Quality Standards Regulation (the regulation) contained in 40 CFR Part 131, which establishes requirements for adoption of water quality standards pursuant to section 303 of the Clean Water Act (CWA or the Act). This ANPRM identifies specific issues on which EPA solicits comment. In addition to the specific issues on which EPA solicits comments, EPA is interested in comments on any other aspects of the program. EPA requests comments with the objectives of: supporting watershed or place-based environmental water quality management, ensuring that current water quality criteria and water quality assessment science can be easily incorporated into State and Tribal water quality programs, and enhancing effective implementation of the Act.

DATES: Written comments must be submitted by midnight January 4, 1999.

ADDRESSES: Send written comments to W–98–01, WQS-ANPRM Comment Clerk, Water Docket, MC 4101, US EPA, 401 M Street, S.W., Washington, D.C. 20460. Comments may also be submitted electronically to OW-Docket@epamail.epa.gov. The record is available for inspection from 9:00 to 4:00 p.m., Monday through Friday, excluding legal holidays at the Water Docket, East Tower Basement, USEPA, 401 M St., S.W., Washington, D.C. For access to docket materials, please call (202) 260–3027 to schedule an appointment.

FOR FURTHER INFORMATION CONTACT: Rob Wood at U.S. EPA Standards and Applied Science Division (4305), 401 M Street SW, Washington, DC 20460 (e-mail: WOOD.ROBERT@EPA.GOV) (telephone: 202–260–9536).

SUPPLEMENTARY INFORMATION: EPA will hold a series of full-day public meetings for the purpose of discussion and debate on the issues presented in this notice. EPA plans to hold the public meetings during the 180-day public comment period on this notice. Dates, times and locations of public meetings will be announced to the public.

A. Potentially Affected Entities

This ANPRM by itself will have no regulatory impact or effect. The ANPRM does contain EPA interpretations of core areas of the regulation as well as EPA thinking about how the regulation may need to be changed. As discussed in more detail below, this ANPRM marks the beginning of a national dialogue on possible changes to the water quality standards regulation and program. If changes to the regulation are proposed and ultimately made final, to the extent such changes would require and/or authorize changes to State and Tribal water quality standards, States and authorized Tribes would be affected. If changes to State and Tribal water quality standards result from any final rule that EPA may promulgate in the future, entities subject to compliance with State or Tribal water quality standards would also potentially be affected. For example, States and Tribes authorized to implement the National Pollutant Discharge Elimination System (NPDES) Permit Program would need to ensure that permits they issue include any limitations on discharges necessary to comply with any water quality standards established as a result of any subsequent final rulemaking. Therefore, entities discharging pollutants to waters of the United States under NPDES could be affected by subsequent proposed and final rulemaking. Categories and entities that may ultimately be affected include:

Category	Examples of potentially affected entities
State, Tribes and Jurisdictional Governments	States, Tribes authorized to administer water quality standards, and jurisdictional governments.
Industry	Industrial dischargers of pollutants to waters of the U.S.
Municipalities	Publicly-owned treatment works discharging pollutants to waters of the U.S.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be affected by any subsequent final rulemaking. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

B. Water Docket Information

The record for this notice has been established under docket number W–98–01 and includes supporting documentation. When submitting written comments to the Water Docket, (see **ADDRESSES** section above) please reference docket number [W–98–01] and submit an original and three copies of your comments and enclosures (including references). To ensure that EPA can read, understand and therefore properly respond to comments, the Agency would prefer that commenters cite the specific question(s) in the notice to which each comment refers. The questions presented in this notice for public comment are organized by subsection and numbered. Each question has a unique number (for example III.B.3.a., question 1) for this purpose.

Comments must be received or postmarked by midnight January 4, 1999. Commenters who want EPA to acknowledge receipt of their comments should enclose a self-addressed, stamped envelope. No facsimiles (faxes) will be accepted.

Electronic comments are encouraged and may be submitted to the Water Docket (see **ADDRESSES** section above). Electronic comments must be submitted as an ASCII file or a WordPerfect file avoiding the use of special characters and any form of encryption. Electronic comments must be identified by the docket number, [W–98–01], and be received by midnight of January 4, 1999. Comments and data will also be accepted on disks in WP5.1 format or

ASCII file format. No confidential business information (CBI) should be sent via e-mail.

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I. Purpose and Objectives of This ANPRM

A. General Purpose and Vision

On February 14, 1998, the visionary "Clean Water Action Plan" was announced by the Administrator of EPA and the Secretary of Agriculture. The "Clean Water Action Plan" is a blueprint for restoring and protecting the Nation's precious water resources. A key element of the plan is advancement of the watershed approach to water quality protection. EPA's belief is that refining designated uses and implementing better more integrated water quality criteria to protect the refined uses, two important themes of this ANPRM, are essential steps in carrying out the blueprint presented. Revision of the water quality standards regulation can be an essential component in implementing the vision of the "Clean Water Action Plan."

States, Tribes and EPA have developed functional water quality standards programs under the current regulation and these programs have provided the basis for significant water quality improvement in the United States. Simply put, the current regulation is not broken. Rather, with the renewed interest in watershed management combined with improved methods for water quality assessment, a comprehensive evaluation for the purpose of strengthening the regulation is appropriate at this time. EPA and the public need to examine whether changes in the regulation could enhance water quality management on a watershed basis and focus resources on areas of greatest concern. A review of the regulation will also complement similar outreach discussions EPA is currently undertaking for the purposes of reviewing the water quality planning and management and total maximum daily load (TMDL) programs as well as aspects of the NPDES program. EPA is committed to ensuring that these programs, combined, form an even stronger integrated basis for water quality planning, priority setting and implementation on a watershed basis.

In recent years there has been a rising level of scrutiny placed on water quality standards and the State, Tribal and EPA decisions based on water quality standards. The increased scrutiny comes from virtually all parties affected by water quality-based decisions and is evidenced by the growing tide of challenges to State standards, EPA policies and guidance, and individual water quality-based decisions. Remaining water quality problems in the U.S. are often difficult to assess, define and solve. Once agreed upon, the solutions will be less conventional than we are used to and may result in different regulatory approaches. Examples of such problems include aquatic and riparian habitat destruction from municipal and agricultural run-off and fish tissue contamination from chemicals with many and diverse sources.

EPA believes that this scrutiny will continue and that an evaluation of the water quality standards program and its regulatory and policy underpinnings to identify where these program underpinnings may need to be strengthened, clarified or revised is imperative. Our task under the Clean Water Act is to ensure adequate water quality even where it is difficult to do so. To accomplish this task, EPA envisions a national water quality standards program in which: the best possible information on whether designated uses are being attained and how to attain and maintain them is available and used; water quality criteria are selected from a wide-ranging menu of scientifically sound criteria that can be tailored to each watershed; national norms of consistency and flexibility in State and Tribal water quality standards are clear; and innovative, cost-effective approaches are

encouraged. To realize this vision, EPA believes that a structured national debate is needed to identify a focused set of issues that may ultimately lead to changes to the water quality standards regulation and policy.

The ANPRM process allows EPA to begin this work by consulting with all interested parties to find out what changes, if any, are necessary and desirable, to make the water quality standards regulation more responsive to current needs and to identify opportunities for further clarifications of policy and guidance by EPA. In the fourteen years since EPA last revised the water quality standards regulation, interested parties have gained considerable experience in developing and implementing water quality standards. This experience will provide valuable information for review of these regulations.

The most significant shift in water quality management programs in recent years has been the increased emphasis on the use of watershed based programs. It is increasingly apparent that EPA, States, Tribes, municipalities and the public share a common view that water quality programs, including water quality standards, can be better tailored to the characteristics, problems, risks and implementation tools available in individual watersheds or basins with meaningful involvement of the local communities. The water quality standards regulation should ensure that States and Tribes have the flexibility to define the water quality standards and hence the environmental objectives of a water body according to the characteristics of the ecosystem and the needs of the water's users within the bounds established under the CWA. The regulation must allow the States and Tribes to tailor water body use designations and criteria to protect these uses within individual basins or watersheds based on the needs in the basin. The present use of broad, jurisdiction-wide use classifications and lists of associated chemical criteria may be at once too general and too narrow for some waters, lacking the refinement necessary to tailor water quality management actions to specific watersheds. This general approach reflects the historical lack of information on specific basins or water bodies and the need to ensure that all waters receive adequate protection. Additionally, it should be made clear how much flexibility States and Tribes have to adjust use designations as information improves about whether a designated use or a higher use can be attained and to reflect natural and human caused changes in water quality that may have occurred. The challenge for EPA, States and Tribes is to identify and use opportunities to refine use designations for waters where it makes sense and better match the water quality criteria to the refined use, thus making water quality standards more flexible. In addition, to more effectively implement the standards, the criteria that are used need to better integrate multiple stressors and their cumulative impacts in order to more effectively protect designated uses.

Significant scientific advancements in recent years have added to the ability to assess environmental impacts and risks related to changes in water quality. As they are further developed, new and emerging sophisticated and integrated analytical tools such as bioassessment, criteria for bioaccumulative chemicals, sediment quality criteria and toxicity assessments will increasingly allow States, Tribes, EPA and the public to characterize better the ecological condition of water resources. At present, this improving capability, used in a tailored watershed planning and management framework, can enhance the ability of States and Tribes to characterize and protect locally agreed upon goals for maintaining and protecting the chemical, physical and biological integrity of individual basins. In the long term, chemical, physical and biological assessment methods will continue to improve. As they do, the water quality standards program should be designed to accommodate effectively the new science. In the meantime, progress should not be stalled by incomplete knowledge.

With the new science and assessment methodologies, however, come new challenges for States and Tribes to identify the resources necessary to make use of these advances. One of the main themes of this ANPRM is the need for better data, and new types of data, in order to support a more refined approach to water quality protection. EPA recognizes, however, that efforts to obtain such data, and develop the analytical capacity to integrate it into existing regulatory programs, could encounter significant resource constraints in some States and Tribes. EPA is well aware that in order for a new, data-intensive, watershed-specific approach to succeed, it must be workable for the States and Tribes that will have to implement it. EPA welcomes comments regarding concerns over resource constraints and ideas for how to address them.

The water quality standards program must protect the nation's waters as envisioned in the CWA. It must establish requirements that are necessary to attain and maintain healthy, sustainable ecosystems. It must be flexible enough for States and Tribes to ensure that standards are protecting water quality in a way that makes sense. EPA seeks to avoid a program that results in costly requirements that have little or no environmental benefit. Thus EPA intends to use its experience and that of the States, Tribes, municipalities, the regulated community, environmental groups and the general public in implementing and utilizing water quality standards over the last fourteen years, to evaluate the regulation and determine if changes are needed to allow greater State, Tribal and local flexibility to develop innovative, cost-effective ways to protect water quality.

EPA may determine through the ANPRM process that the concepts described above can be better integrated into water quality management decision making through development of new or revised policies and guidance rather than revisions to the regulation. Because of this possibility, EPA is reserving its decision whether to propose and finalize revisions to the regulation. At minimum, EPA believes that any revisions to the water quality standards regulation should result in a regulation that can be used to render protective, tailored, site-specific water quality-based decisions that bear reasonable compliance costs for the regulated community, as well as reasonable implementation costs for States, Tribes and EPA. At the same time, the regulation should allow sufficient flexibility to States and Tribes, if they choose, to implement water quality standards programs in a manner that is no more burdensome than under the existing regulation.

B. Objectives

In publishing this ANPRM, EPA is beginning a review of the regulation in a public forum in an attempt to identify possible amendments to the regulation, and new guidance or policy that may be needed to address three distinct objectives. They are: (1) to eliminate any barriers and develop incentives to enhance State and Tribal implementation of watershed-based water quality planning and management; (2) to enhance State and Tribal capability to incorporate current criteria and water quality assessment science into their water quality standards programs, and; (3) to improve the regulation so that it may be implemented more efficiently and effectively (including cost-effectively). Meeting these three objectives, EPA believes, will facilitate further water

quality improvements locally and nationally. EPA urges commenters to keep all three main objectives in mind when reviewing, analyzing and commenting on this ANPRM.

II. Introduction to Water Quality Standards

A. Statutory History

The first comprehensive legislation for water pollution control was the Water Pollution Control Act of 1948 (Pub. L. 845, 80th Congress). This law adopted principles of State-Federal cooperative program development, limited federal enforcement authority, and limited federal financial assistance. These principles were continued in the Federal Water Pollution Control Act (Pub. L. 660, 84th Congress) in 1956 and in the Water Quality Act of 1965. Under the 1965 Act, States were directed to develop water quality standards establishing water quality goals for interstate waters. By the early 1970's, all the States had adopted such water quality standards. Since then, States have revised their standards to reflect new scientific information, the impact on water quality of economic development and the results of water quality controls.

Due to enforcement complexities and other problems, an approach based solely on water quality standards was deemed too weak to make a difference. The purely water quality-based approach prior to 1972 lacked enforceable Federal mandates and standards, and a strong impetus to implement plans for water quality improvement. The result was an incomplete program that in Congress' view needed strengthening. In the Federal Water Pollution Control Act Amendments of 1972 (Pub. L. 92–500, Clean Water Act or CWA), Congress established the National Pollutant Discharge Elimination System (NPDES) whereby each point source discharger to waters of the U.S. is required to obtain a discharge permit. The 1972 Amendments required EPA to establish technology-based effluent limitations that are to be incorporated into NPDES permits. In addition, the amendments extended the water quality standards program to intrastate waters and required NPDES permits to be consistent with applicable State water quality standards. Thus, the CWA established complementary technology-based and water quality-based approaches to water pollution control. Now, after nearly 25 years of investment in technology-based controls and some $70 billion in sewage treatment plant construction, attention is turning back to water quality standards as a mechanism to make improvements in water quality beyond those that have been achieved through technology-based controls.

Water quality standards serve as the foundation for the water-quality based approach to pollution control and are a fundamental component of watershed management. Water quality standards are State or Tribal law or regulation that: define the water quality goals of a water body, or segment thereof, by designating the use or uses to be made of the water; set criteria necessary to protect the uses; and protect water quality through antidegradation provisions. Although the CWA gives EPA an important role in determining appropriate minimum levels of protection and providing national oversight, it also gives considerable flexibility and discretion to States and Tribes to design their own programs and establish levels of protection above the national minimum. States and Tribes adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Act. "Serve the purposes of the Act" (as defined in Sections 101(a), 101(a)(2), and 303(c) of the Act) means that water quality standards should: (1) include provisions for restoring and maintaining chemical, physical, and biological integrity of State and Tribal waters, (2) provide, wherever attainable, water quality for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water ("fishable/swimmable"), and (3) consider the use and value of State and Tribal waters for public water supplies, propagation of fish and wildlife, recreation, agricultural and industrial purposes, and navigation. See 40 CFR 131.2.

Section 303(c) of the CWA establishes the basis for the current water quality standards program. Section 303(c):

1. Defines water quality standards;
2. Identifies acceptable beneficial uses: public water supply, propagation of fish and wildlife, recreational purposes, agricultural and industrial water supplies and navigation;
3. Requires that State and Tribal standards protect public health or welfare, enhance the quality of water and serve the purposes of the Act;
4. Requires that States and Tribes review their standards every three years;
5. Establishes the process for EPA review of State and Tribal standards, including where necessary the promulgation of a superseding Federal rule in cases where a State's or Tribe's standards are not consistent with applicable requirements of the CWA or in situations where the Administrator determines that Federal standards are necessary to meet the requirements of the Act.

The decade of the 1970's saw State and EPA attention focus on creating the infrastructure necessary to support the NPDES permit program and development of technology-based effluent limitations. While the water quality standards program continued, it was a low priority in the overall CWA program. In the early 1980's, it began to be recognized that greater attention to the water quality-based approach to pollution control would be needed to effectively protect and enhance all of the nation's waters.

The first statutory evidence of this was the enactment of a CWA requirement that after December 29, 1984, no construction grant could be awarded for projects that discharged into stream segments which had not, at least once since December 1981, had their water quality standards reviewed and revised or new standards adopted as appropriate under Section 303(c). (Public Law 97–117, Section 24, "Revised Water Quality Standards.") The efforts by the States to comply with this one-time requirement essentially made the States' water quality standards current as of that date for segments with publicly-owned treatment works (POTWs) discharging into them.

Additional impetus to the water quality standards program occurred on February 4, 1987, when Congress enacted the Water Quality Act of 1987 (Pub. L. 100–4). Congressional impatience with the lack of progress in State adoption of standards for toxics (which had been a national program priority since the early 1980's) resulted in the 1987 adoption of new water quality standard provisions in the Water Quality Act amendments. These amendments reflected Congress' conclusion that toxic pollutants in water are one of the most pressing water pollution problems. One concern Congress had was that States were relying, for the most part, on narrative criteria to control toxics (e.g., "no toxics in toxic amounts"), which made development of effluent limitations in permits difficult. To remedy this, Congress adopted section 303(c)(2)(B), which essentially required development of numeric criteria for those water body segments where toxic pollutants were likely to adversely affect designated uses.

The 1987 Amendments gave new teeth to the control of toxic pollutants. As Senator Mitchell put it, Section 303(c)(2)(B) requires "States to identify waters that do not meet water quality

standards due to the discharge of toxic substances, to adopt numerical criteria for the pollutants in such waters, and to establish effluent limitations for individual discharges to such water bodies.'' (From Senator Mitchell, 133 Cong. Rec. S733.) To assist States in complying with Section 303(c)(2)(B), EPA issued program guidance in December 1988 and instituted an expanded program of training and technical assistance.

Section 518 was another major addition in the 1987 Amendments to the Act. This section extended participation in the water quality standards and 401 certification programs to certain Indian Tribes. The Act directed EPA to establish procedures by which a Tribe could ''qualify for treatment as a State,'' at its option, for purposes of administering the standards and 401 certification programs. The Act also required EPA to create a mechanism to resolve disputes that might develop when unreasonable consequences arise from a Tribe and a State or another Tribe adopting different water quality standards on common bodies of water.

Furthermore, with the 1987 Amendments, the Act explicitly recognized EPA's antidegradation policy for the first time. The intent of the antidegradation policy in EPA's regulation was and is to protect existing uses and the level of water quality necessary to protect existing uses and to provide a means for assessing activities that may impact high quality waters and ruling on whether such projects could proceed. Section 303(d)(4) of the Act requires that water quality standards in those waters that meet or exceed levels necessary to support designated uses ''may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section.''

B. Regulatory History

In the late 1960's and early 1970's the water quality standards program was initiated and administered based on minimal guidance and Federal policies—many of which are still reflected in the water quality standards program today.

EPA first promulgated a water quality standards regulation in 1975 (40 CFR 130.17, 40 *FR* 55334, November 28, 1975) as part of EPA's water quality management regulations mandated under Section 303(e) of the Act. As discussed earlier, the standards program had a relatively low priority during this time. This was reflected in the minimal requirements of the first Water Quality Standards Regulation. Few requirements on designating water uses and procedures were included. The Regulation was general, requiring ''appropriate'' water quality criteria necessary to support designated uses and incorporating the antidegradation policy. Toxic pollutants or any other specific criteria were not mentioned.

Some States developed detailed water quality standards regulations while others adopted only general provisions which proved to be of limited use in the management of increasingly complex water quality problems and created disparities in requirements on regulated entities. The few water quality criteria that were adopted addressed a limited number of pollutants and primarily described fundamental water quality conditions (e.g., pH, temperature, dissolved oxygen and suspended solids) or dealt with conventional pollutants.

In the late 1970s, EPA determined that existing State water quality standards needed to be better developed. EPA moved to strengthen the water quality program to complement the technology based controls. EPA amended the Water Quality Standards Regulation to explicitly address toxic criteria requirements in State standards and other legal and programmatic issues. November 8, 1983 (54 *FR* 51400). This regulation is more comprehensive than its predecessor and includes more specific regulatory and procedural requirements. The 1983 regulation created the concept of use attainability analysis, added detail on the adoption of numeric criteria including authorization for site-specific criteria, and listed specific procedural requirements and definitions not included in the original 1975 regulation. The regulation specified the roles of the States and EPA and the administrative requirements for States in adopting and submitting their standards to EPA for review. It also delineated the EPA requirements for review of State standards and promulgation of federal standards.

The 1983 regulation provided States (and subsequently in 1991) Tribes with the option of refining their use designation process by allowing them to establish subcategories of uses, such as cold water and warm water aquatic life designations. The 1983 regulation also clarified that States (and subsequently Tribes) may adopt discretionary policies affecting the implementation of standards, such as mixing zones, low flows, and variances.

In support of the 1983 Regulation, EPA simultaneously issued program guidance entitled *Water Quality Standards Handbook* (December, 1983). The Handbook provided guidance on the interpretation and implementation of the Water Quality Standards Regulation. This document also contained information on scientific and technical analyses that are used in making decisions that would impact water quality standards. EPA also developed the *Technical Support Document for Water Quality-Based Toxics Control* (EPA 44/4–85–032, September, 1985) (TSD) which provided additional guidance for implementing State water quality standards. In 1991, EPA revised and expanded the TSD. (EPA 505/2–90–001, March 1991). In 1994, EPA issued the *Water Quality Standards Handbook: Second Edition* (EPA–823–B–94–006, August 1994).

To accelerate compliance with CWA section 303(c)(2)(B) (created by the 1987 Water Quality Act), EPA started action in 1990 to promulgate numeric water quality criteria for those States that had not adopted sufficient water quality standards for toxic pollutants. The intent of the rulemaking, known as the National Toxics Rule, was to strengthen State water quality management programs by increasing the level of protection afforded to aquatic life and human health through the adoption of all available criteria for toxic pollutants listed under 307(a) of the CWA (priority pollutants) present or likely to be present in State waters. This action culminated on December 22, 1992, with EPA promulgating Federal water quality criteria for priority toxic pollutants for 14 States and Territories (see 57 FR 60848).

Subsequent to the promulgation of criteria under the National Toxics Rule, EPA altered its national policy on the expression of aquatic life criteria for metals. On May 4, 1995 at 60 FR 22228, EPA issued a stay of several metals criteria (expressed as total recoverable metal) previously promulgated under the National Toxics Rule for the protection of aquatic life. EPA simultaneously issued an interim final rule that changed these metal criteria promulgated under the National Toxics Rule from the total recoverable form to the dissolved form.

The Water Quality Standards Regulation was amended in 1991 to implement Section 518 of the Act to expand the standards program to include Indian Tribes (56 FR 64893, December 12, 1991). EPA added 40 CFR 131.7 to describe the requirements of the issue dispute resolution mechanism (to resolve unreasonable consequences that may arise between a Tribe and a State or another Tribe when differing water quality standards have been adopted for a common body of water) and 40 CFR 131.8 to establish the

procedures by which a Tribe applies for authorization to assume the responsibilities of the water quality standards and section 401 certification programs.

Fourteen years since its last major revision, the water quality standards regulation is undergoing review and potential revision in light of experiences gained in its implementation by States, Tribes, EPA and the public. The review is intended to reflect the changing nature of the program and to identify specific changes that will strengthen water quality protection and restoration, facilitate watershed management initiatives, and incorporate evolving water quality criteria and assessment science into water quality standards programs. Based on the review and the comments expected on the ANPRM, EPA may decide to revise parts of the regulation and/or change some of its existing policies and guidance for the water quality standards program.

Water quality standards are essential to a wide range of surface water activities, including: (1) setting and revising water quality goals for watersheds and/or individual water bodies, (2) monitoring water quality to provide information upon which water quality-based decisions will be made, (3) calculating total maximum daily loads (TMDLs), waste load allocations (WLAs) for point sources of pollution, and load allocations (LAs) for natural background and nonpoint sources of pollution, (4) developing water quality management plans which prescribe the regulatory, construction, and management activities necessary to meet the water body goals, (5) calculating NPDES water quality-based effluent limitations for point sources, in the absence of TMDLs, WLAs, LAs, and/or water quality management plans, (6) preparing various reports and lists that document the condition of the State's or Tribe's water quality, and (7) developing, revising, and implementing an effective section 319 management program which outlines the State's or Tribe's control strategy for nonpoint sources of pollution.

Note: The term "State" as used in this Notice refers to the fifty States, all Territories of the United States, and the District of Columbia. The term "Tribe" or "Tribal" as used in this Notice generally refers to all Indian Tribes authorized to administer the water quality standards. On occasion, the term "Tribe" or "Tribal" refers to Indian Tribes that are eligible to seek authorization to administer the water quality standards, but have not yet secured such authorization. There are some parts of the law and regulation where "State" is now interpreted to mean "State or Tribe."

C. Water Quality Guidance for the Great Lakes System

On March 23, 1995, EPA published in the **Federal Register** its Water Quality Guidance for the Great Lakes System (60 FR 15366, March 23, 1995) (Great Lakes Guidance). The Guidance consists of water quality criteria for 29 pollutants to protect aquatic life, wildlife, and human health, and detailed methodologies to develop criteria for additional pollutants; implementation procedures to develop more consistent, enforceable water quality-based effluent limits in discharge permits, as well as TMDLs of pollutants that can be allowed to reach the Great Lakes and their tributaries from all sources; and antidegradation policies and procedures.

Section 118(c)(2) of the Clean Water Act (CWA) (Pub. L. 92–500 as amended by the Great Lakes Critical Programs Act of 1990 (CPA), Pub. L. 101–596, November 16, 1990) required EPA to publish proposed and final water quality guidance on minimum water quality standards, antidegradation policies, and implementation procedures for the Great Lakes System. EPA responded to these requirements by initiating a rulemaking, publishing the Proposed Water Quality Guidance for the Great Lakes System (proposed Guidance) in the **Federal Register** on April 16, 1993 (58 FR 20802). EPA also published four subsequent documents in the **Federal Register** identifying corrections and requesting comments on additional related materials. EPA received over 26,500 pages of comments, data, and information from over 6,000 commenters in response to these documents and from meetings with members of the public.

After reviewing and analyzing the information in the proposal and these comments, EPA developed and published the Great Lakes Guidance, codified at 40 CFR Part 132. Part 132 contains six appendixes of detailed methodologies, policies, and procedures. Detailed discussion of the final Guidance is provided in "Final Water Quality Guidance for the Great Lakes System: Supplementary Information Document" (SID), (EPA, 1995, 820–B–95–001) and in additional technical and supporting documents which are available in the docket for the rulemaking. Copies of the SID and other supporting documents are also available from EPA in electronic format, or in printed form for a fee upon request.

Developing the Great Lakes Guidance was an enormous effort based on extensive public comment and analysis on some of the same issues that are addressed in this ANPRM. One principal difference between the provisions in the Great Lakes Guidance and the regulation, policy and guidance that is the subject of this ANPRM is that where the Great Lakes Guidance addressed programs in the Great Lakes States only, this ANPRM addresses the national water quality standards regulation and program, and thus the programs of all States and Tribes with water quality standards authority. Where the Great Lakes Guidance addressed an issue or issue area that is also addressed in the ANPRM, that analysis and conclusion may or may not be relevant to the discussion of the national program. Where it is, today's ANPRM identifies the specific relevant Great Lakes Guidance provisions in the specific issue discussions. Many of the provisions in the Great Lakes Guidance were developed to address the unique problems in the Great Lakes Basin that stem from known contamination by bioaccumulative chemicals and the long retention time of water in the Lakes. Commenters should keep in mind that the Great Lakes provisions were derived for States that are in the Great Lakes Basin in whole or part and should consider the uniqueness of the Great Lakes Basin when evaluating Great Lakes Guidance provisions for application outside of the Great Lakes Basin.

III. Program Areas for Public Comment

A. Introduction

Entering its 33rd year, the water quality standards program has begun to evolve from one with a narrow focus on establishing water body uses and adopting chemical criteria for basic water quality characteristics addressing the most obvious sources of pollution to a more comprehensive program. In recent years the scientific community has developed greater knowledge of the full range of stressors adversely impacting surface waters. EPA believes the water quality standards program should evolve to keep pace with expanding science to address water quality problems in a more comprehensive way, accommodating more specific and sophisticated water use classifications, criteria for more pollutants, new forms of criteria and companion ecological and health indicators, and closer integration with other programs. At the same time, EPA realizes that such an evolution could require a significant increase in analytical resources from States, Tribes and the regulated community, and that changes to the existing program must be structured in a way that is workable.

This is an appropriate time to begin a structured national debate aimed at identifying the focused changes necessary to strengthen the underpinnings of water quality standards and implementation. In the fourteen years since the regulation was last revised, there have been numerous scientific developments, statutory changes, court decisions, and implementation issues affecting the water quality standards program. The shift in program focus beyond just chemical contamination to include ecosystem protection and watershed approaches necessitates reexamining basic program concepts. In addition, there is an opportunity to address possible barriers to effective water quality improvements where it is determined that regulatory changes are possible under existing law.

In recent years, EPA has heard from the States and Tribes as well as the environmental and regulated communities regarding the necessity and focus of a revision to the water quality standards regulation. As indicated by the wide range of issues and options presented in this advance notice, views of the different stakeholder groups often differ considerably. Many stakeholders believe that a revised regulation is needed for continued improvements in water quality protection. Others believe changes are needed to allow more flexible, cost-effective approaches by States and Tribes. Conversely, many stakeholders have said that the regulation is sufficient and does not need to be reviewed.

A key issue presented here relates to the degree of specificity necessary should EPA revise the regulation. There are many who support a more flexible regulation to allow States and Tribes to address new and changing circumstances. Under a more flexible regulation, States and Tribes could more easily tailor their programs to deal with pressing water quality restoration and protection needs that are not well addressed presently. Others support a regulation with more specific regulatory requirements. The latter would promote a more consistent minimal level of protection in State and Tribal water quality standards, provide more clarity on standards issues, and serve as a stronger tool in encouraging States and Tribes to take appropriate restoration and protection actions. EPA urges commenters to consider the appropriate balance between flexibility, national consistency, and consistency within States and Tribes when commenting on any of the ideas presented in this notice.

One of the outcomes of this ANPRM and follow-on actions can be establishment of a clearer set of national minimum policies and implementation procedures on which EPA will reliably and predictably base its approval and disapproval decisions on State and Tribal water quality standards submittals. EPA remains committed to making consistent decisions from State to State and Tribe to Tribe and State to Tribe to meet our obligation to ensure an appropriate level of protection nationally and that the goals of the Act are achieved. Clarifying these national norms will serve to better articulate the norms of protection from State to State and Tribe to Tribe and State to Tribe and also to clarify national norms of flexibility. Defining the appropriate level of consistency, in turn, defines the appropriate degree level of flexibility. In addition, establishing norms of consistency and flexibility should help to resolve State or Tribal differences with EPA on water quality standards early in the process, before the approval/disapproval stage.

While the following discussion describes specific areas and issues for public review, the public is welcome to comment on any aspect of the water quality standards program. EPA emphasizes, however, that publication of this Notice does not commit the Agency to proceeding with a regulatory change. EPA has not decided whether it will, in fact, propose regulatory amendments, and, if proposed, how extensive that effort might be. This decision will be made after considering the comments received and the need to address other priority activities as well as any Congressional and Executive Branch directives. A potential outcome of this public review may be additional guidance and/or policies rather than regulatory changes.

EPA has not determined the next steps it will take after evaluation of all the comments received on this ANPRM. It is likely that any follow-on proposed rule to amend 40 CFR 131 would focus on a relatively narrow set of issues and that many other issues could be resolved through policy and guidance. EPA requests that commenters identify the five to seven issues considered highest priority for possible regulatory amendments. The summary section at the end of this notice contains a brief summary of the potential changes to the water quality standards regulation that are discussed and considered in this ANPRM. The list of potential changes includes the full range of potential changes to the regulation on which EPA is specifically requesting comment. Each potential change to the regulation is discussed in detail in the corresponding section of the ANPRM.

B. Uses

1. Background

Section 131.10 of the current regulation describes States' and authorized Tribes' responsibilities for designating and protecting uses. The regulation requires that States and Tribes specify the water uses to be achieved and protected; requires protection of downstream uses; allows for sub-category and seasonal uses, for instance, to differentiate between cold water and warm water fisheries; sets out minimum attainability criteria; lists six factors of which at least one must be satisfied to justify removal of designated uses which are not existing uses; prohibits removal of existing uses; establishes a mandatory upgrading of uses which are existing but not designated; and establishes conditions and requirements for conducting use attainability analyses.

These provisions make a distinction between existing and designated uses and set out specific requirements to ensure protection of these two broad use categories. Designated uses are defined as those uses specified in water quality standards for each water body or segment whether or not they are being attained. EPA interprets existing uses as those uses actually attained in the water body on or after November 28, 1975 (the date of EPA's initial water quality standards regulation), whether or not they are included in water quality standards. 40 CFR 131.3(e). Designated uses focus on the attainable condition while existing uses focus on the past or present condition. Section 131.10 then links these two broad use categories in a manner which intends to ensure that States and Tribes designate appropriate water uses, reflecting both the existing and attainable uses of each water body. For this discussion it is important to consider both the distinction between and linkage of designated and existing uses.

It is in designating uses that States and Tribes establish the environmental goals for their water resources, and it is in designating uses that States and Tribes are allowed to evaluate the attainability of those goals. Because water quality standards perform the dual function of establishing water quality goals and ultimately serving as the regulatory basis for water quality-based treatment controls and strategies, typically, although not exclusively, via water quality criteria protecting those uses, a State or Tribe often weighs the environmental, social and economic

consequences of its decisions in designating uses. The regulation allows the State or Tribe some flexibility in weighing these considerations and adjusting these goals over time. Reaching a conclusion on the uses that appropriately reflect the potential for a water body, determining the attainability of those goals, and appropriately evaluating the consequences of a designation, however, can be a difficult and controversial task. Appropriate application of this process involves a balancing of environmental, scientific, technical, and economic and social considerations as well as public opinion and is therefore one of the most challenging areas of the current regulation.

To direct this decision making-process, the regulation establishes requirements that must be followed when designating uses or concluding that attaining a use is infeasible. When performing this attainability analysis, a State or Tribe considers physical, chemical, biological and economic factors that may limit the potential for achieving the goal use.

EPA's current water quality regulation effectively establishes a ''rebuttable presumption'' that ''fishable/swimmable'' uses are attainable and therefore should apply to a water body unless it is affirmatively demonstrated that such uses are not attainable. EPA believes that the rebuttable presumption policy reflected in these regulations is an essential foundation for effective implementation of the Clean Water Act as a whole. The ''use'' of a water body is the most fundamental articulation of its role in the aquatic and human environments, and all of the water quality protections established by the CWA follow from the water's designated use. This approach preserves States' and Tribes' paramount role in establishing water quality standards, in this instance, in weighing any available evidence regarding the attainable uses of a particular water body. The rebuttable presumption approach does not restrict the discretion that States and Tribes have to determine that ''fishable/swimmable'' uses are not, in fact, attainable in a particular case. Rather, if the water quality goals articulated by Congress are not to be met in a particular water body, the regulations simply require that such a determination be based upon a credible, ''structured scientific assessment'' of use attainability.

Because there is a presumption that the uses specified in sections 101(a)(2) and 303(c) of the Clean Water Act are attainable (protection and propagation of fish, shellfish and wildlife and recreation in and on the water [101(a)(2)]; public water supplies, propagation of fish and wildlife, recreational purposes, agricultural purposes, and navigation [303(c)(2)(A)]), the criteria for overcoming that presumption are carefully circumscribed. The economic use removal test, for example, requires a showing that the cost of compliance with the use(s) would result in ''substantial and widespread economic and social impact.'' This is a high threshold to ensure that the interim goals of section 101(a)(2) and the section 303(c) uses are not abandoned without appropriate cause.

The general construction of the § 131.10 requirements for designating uses, supplemented with specific Agency guidance, has worked well in most situations over the last 14 years, and the use designation process is well established in State and Tribal water quality standards programs. There are, however, a number of new issues that have arisen since the 1983 regulation was promulgated. Often these new issues are associated with site-specific decision-making, and EPA expects the trend toward site-specific application of water quality standards will accelerate as States and Tribes begin implementing watershed protection programs, using field biological information to more precisely describe aquatic communities to be protected or restored, and applying new watershed or ecosystem-specific approaches to criteria development. As explained in the ''Objectives'' discussion in this document, one of the principal reasons for this notice is to determine whether or not the current regulation is sufficiently flexible to accommodate an expected shift in program emphasis beyond chemical contaminants to ecosystem protection and watershed approaches that will necessarily place greater emphasis on integrated assessments of both chemical and non-chemical stressors and watershed-specific decision-making.

While it is important to identify potential barriers to needed flexibility, commenters should identify, as well, any changes or clarification that may be needed to ensure that an appropriate level of national consistency is maintained across and within all jurisdictions. In this section of the notice, EPA seeks comment on the following issues: (1) refined designated uses with more focus on watersheds and ecosystems, (2) existing uses, (3) attainability and removal of designated uses, and (4) alternatives to removal of designated uses.

2. Refined Designated Uses

The current regulation at 40 CFR 131.10(a), based on section 303 of the CWA, requires that States and authorized Tribes specify appropriate water uses to be achieved and protected, taking into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. The regulation also allows, but does not require, States and Tribes to identify more specific sub-categories of these general use categories.

Over the years, States and Tribes have created many different use classification systems ranging from a straightforward replication of uses specifically listed in section 303 of the Act to more complex systems that express designated uses in very specific terms or establish sub-classifications which identify different levels of protection. For example, some States simply specify ''water supply'' as a use classification applicable throughout the State while others may identify several specific sub-categories related to the quality of the raw water supply and anticipated treatment requirements. Similarly, some States designate general ''aquatic life'' uses while others list a variety of sub-categories based on a range of aquatic community types which may include descriptions of core aquatic species representative of each sub-category. Although a variety of approaches have evolved and become established in State and Tribal programs, the current regulation is not specific about the level of precision States or Tribes must achieve in designating uses.

There are advantages and drawbacks for either the general or specific use classification systems and it is not clear that either is necessarily superior in ensuring full protection of State or Tribal water quality. There is, however, a need for the use designation process, whether implementing a general or specific classification system, to clearly articulate and differentiate intended levels of protection with enough specificity so that decision-makers can appropriately develop and implement the standards on a site-or watershed-specific basis and so that the public can understand, identify with, and influence the goals set for waters they care about.

Lack of precision in uses and criteria assigned to protect those uses can inadvertently result in either a lesser or greater level of protection than was actually intended when the water quality standards were adopted. Although the designated use specificity

issue may apply to any of the Section 303 general use categories, it may be most relevant for aquatic life uses. Aquatic communities can vary significantly from water body-to-water body. As noted above, however, State and Tribal use classifications generally do not reflect the variability among aquatic community types and may list, instead, very general descriptions such as ''aquatic life'' as the designated use. Where this is the case, it is possible that measurable changes in aquatic community composition or production could occur at a specific site and still satisfy the definition of ''aquatic life,'' *unless* somewhere in its process the State or Tribe has documented information about its specific intent in applying the ''aquatic life'' classification to each water body. For example, an activity that causes the discharge of sediment, altering the physical habitat in the receiving water body, could result in a measurable change in aquatic community structure and function (e.g., the types of aquatic species found in that segment). Yet, that activity may arguably satisfy a general ''aquatic life'' use protection requirement simply because of a lack of specificity in the regulatory description of that designated use. In this case, lack of precision in the designation or description of the use could result in under protection of the resource, unless somewhere in the State or Tribal process an intended level of protection is specified.

Alternatively, lack of precision in uses and assigned criteria could result in standards that are over protective, resulting in application of unnecessary control requirements. In assigning criteria to protect general use classifications, a State or Tribe must ensure that the criteria are sufficiently protective to safeguard the full range of waters in the State or Tribe (i.e., criteria would be based on the most sensitive use). While this approach will result in full protection of all State or Tribal waters, the approach has been challenged, especially for aquatic life uses, where evidence suggests that the general use and criteria will require controls more stringent than needed to protect either the existing or potential aquatic community for a specific water body. Although EPA supports broad application of statewide or tribe-wide criteria to ensure that sensitive uses are protected where site-specific information is lacking, the Agency's current thinking is that there is a growing need to more precisely tailor use descriptions and criteria to match site-specific conditions, ensuring that uses and criteria provide an appropriate level of protection which, to the extent possible, is neither over nor under protective. This concept was reflected in the Agency's 1994 Combined Sewer Overflow Policy (59 FR 18688).

The level of protection issue is one of both use and criteria. To have a meaningful effect, a more precise use description must be accompanied by more focused criteria, appropriately tailored to the refined use description. EPA recognizes that, at present, national or statewide or tribe-wide criteria generally are not sufficiently precise to distinguish among all of the various sub-categories of uses. As water quality standards issues become more watershed-specific or site-specific, however, the trend will very likely be toward more specific use descriptions and; because the essential purpose of the criteria is to describe, evaluate attainment of, and protect the designated use; more site-specific criteria development.

A potential constraint for refining the aquatic life uses would be the resource commitment often associated with developing a comprehensive biological database. Because of the resource constraints, it may be difficult for a State or Tribe to develop designated uses (or use descriptions) for each segment that include a detailed biological description of the aquatic community to be protected. Simply from a practical standpoint, it may be more workable to reserve such precise determinations for watershed-specific decision-making. Therefore, in highlighting the issue of greater specificity, EPA is suggesting that one, but perhaps not the only, way to resolve this issue is to mandate much greater specificity in a State or Tribal use classification structure.

Obviously, there is a need for designated use descriptions in State and Tribal regulation to be defined, at a minimum, with sufficient specificity to ensure existing and potential uses will be protected and/or attained. The difficulty is in striking a balance between specificity sufficient to ensure uses are appropriately protected and flexibility needed to allow efficient widespread application of a classification system to all State or Tribal waters. A question has been raised about, and EPA is considering, whether or not the current regulation and guidance provide the framework needed to strike the appropriate balance and the guidance on when and how to refine uses.

Aquatic Life

An issue related to the manner in which States and Tribes define designated aquatic life uses is the occasional confusion expressed between the actual intent of the CWA section 101(a)(2) interim goals and the ''fishable/swimmable'' short hand expression often used to describe those interim goals. EPA acknowledges that the phrase ''fishable/swimmable'' does not fully describe the intent and scope of the CWA section 101(a)(2) interim goals. The confusion over the expression ''fishable'' often surfaces where there is an action aimed at removing an aquatic life use from a particular water body where there are no sport or commercial fisheries. In these instances, an argument is often made that the water body does not meet the ''fishable'' intent of the section 101(a)(2) interim goals because the water body naturally supports only ''minnows'' and/or aquatic invertebrates. EPA believes this is an unacceptable argument for removing an aquatic life designated use or excluding an aquatic life designated use. As explained in EPA's Questions and Answers on Antidegradation (USEPA, 1985, p. 3), the Agency considers the protection afforded by standards to focus on an appropriately representative aquatic community whether or not that community includes sport or commercial fish:

> The fact that sport or commercial fish are not present does not mean that the water may not be supporting an aquatic life protection function. An existing aquatic community composed entirely of invertebrates and plants, such as may be found in a pristine tributary alpine stream, should be protected whether or not such a stream supports a fishery. Even though the shorthand expression ''fishable/swimmable'' is often used, the actual objective of the Act is to restore the chemical, physical and biological integrity of our Nation's waters (Section 101(a)). The term ''aquatic life'' would more accurately reflect the protection of the aquatic community that was intended in Section 101(a)(2) of the Act.

Thus, EPA's current interpretation of the regulation means that the Agency will not approve State or Tribal action to exclude aquatic life protection based on a conclusion that a water body does not support a ''fishery'', implying a sport or commercial fishery. EPA's current thinking is that it would improve the regulatory text to reflect this interpretation explicitly.

More specific to this discussion of refined designated uses is the question of whether or not the Agency should mandate that a minimum ''aquatic life'' use sub-category or sub-categories be included in all State or Tribal designated use classification systems to ensure appropriate protection of waters

which do not support commercial or sport fisheries (or any fish).

Refined Designated Uses and Use Attainability Requirements

There is one additional issue related to the refined designated use discussion that should be addressed. A question has been raised about the applicability of the use attainability requirements when establishing refined designated uses (with particular emphasis of aquatic life uses). The question raised is: since refined designated uses may be less inclusive than broad designations, will EPA consider development of a more refined use description to be a change in use subject to the use attainability requirements? Under current regulation, the combination of a new use sub-category and less stringent criteria triggers the use attainability requirements in § 131.10 of the Federal regulation (see § 131.10(j)(2)). However, it is possible that under certain circumstances, this requirement could be modified.

Such a modification would focus on the kind of information that should accompany any refined use classification based on a more precise biological description, whether or not formal use attainability assessment requirements apply. Essentially, there are two issues to be addressed: (1) does the refined description of the aquatic community reflect the reference condition (i.e., natural states) for the kinds of waters to which the new classification is to be applied? and (2) are any newly proposed criteria scientifically defensible? These are basic questions which would have to be addressed whether or not the use attainability requirements were invoked. As a result, a proposal to refine use categories will have to be accompanied by a rationale explaining how it was determined that the proposed biological description appropriately reflects the potential for waters to which the new sub-classification is to be applied. If warranted, this refined description can then serve as the basis for deriving defensible and appropriate criteria specific to the new sub-classification.

Request for Comment Refining Use Designations

EPA seeks comment on the following questions:

1. The current regulation is not specific about the level of precision States or Tribes must achieve in designating uses. The regulation allows for subcategories of uses, but does not mandate such an approach. Should the regulation be revised to promote or require greater specificity in designated uses, particularly for aquatic life uses, to support watershed-specific decision-making such as is anticipated in implementing watershed or place-based initiatives?

2. Where a State or Tribe utilizes broadly-defined designated uses, could the desired level of specificity be adequately addressed in State or Tribal standards that clearly articulate the intent of the designated uses as they would apply to specific waters of the State or Tribe?

3. If EPA were to specify a required level of precision in establishing use categories, what factors should be considered in prescribing a level of specificity? That is, what factors should be considered in striking a balance between specificity sufficient to ensure uses are afforded an appropriate level of protection and flexibility/efficiency needed to allow widespread application of the classification system?

4. At a minimum, should the regulation require that State and Tribal aquatic life use categories include a sub-category or sub-categories that may be assigned to protect aquatic communities that do not include a "fishery"? Alternatively, should the regulation explicitly reflect EPA's current interpretation of the regulations to the effect that State and Tribal aquatic life classification systems protect a range of aquatic communities whether or not there are sport or commercial fish (or any fish) present?

5. Should the use attainability requirements in 131.10(j)(2) be modified to recognize situations where scientifically defensible less stringent criteria may be appropriate for refined uses which reflect the reference condition for particular waters?

3. Existing Uses

a. Protection of Existing Uses. The requirement to protect existing uses is addressed in two places in the current regulation—Section 131.10, designation of uses and Section 131.12, antidegradation. (see discussion of antidegradation, "tier 1", in section III.D of this document) As discussed in the background section above, the regulation defines "existing uses" as "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." (40 CFR 131.3(e)) As a result, the focus of existing uses, is on the past or present condition of the water body. Furthermore, by establishing requirements prohibiting the removal of existing uses and ensuring those uses will be appropriately recognized in State and Tribal water quality standards, the current regulation ensures that the better of the past or present condition, at a minimum, will be maintained and protected. Determining whether or not an existing use has occurred in the past or is currently in place is not always a straightforward task, however, and over the years, a number of questions have been raised about exactly what the "existing use" provisions in 131.10 require. These questions generally fall into two categories: (1) what is the link between existing uses and the State or Tribal use classification system? and (2) what is the relationship between existing uses, existing water quality and potential uses, i.e. uses that may be attainable in the water body whether or not those uses are presently designated for the water body or are presently being attained?

The first question addresses the relationship between the existing use protection provisions in Section 131.10 and State or Tribal use classification systems. There appears to be some confusion on this point. The confusion seems to center on what may appear to be conflicting mandates—protect what is there and allow no further erosion of water quality, and appropriately designate the existing use in regulation using the established classification system. The existing use definition and the requirement that existing uses be protected suggests to some that the description of existing uses is constrained by the way in which a State or Tribe has described its designated uses in its classification system. That is, they argue that an existing use, to be adequately protected, needs to fit into one of the categories or sub-categories established in State or Tribal regulation, and as a result, a decision about whether or not a use is "existing" is likewise constrained by the use descriptions and criteria established in that classification system.

For purposes of Section 131.10, this is generally the case. Again, this Section of the Federal regulation establishes two requirements with respect to existing use protection: (1) a prohibition against removal of a designated use where that use is determined to be an existing use, and (2) a requirement that existing uses be protected by State or Tribal regulation. To ensure a workable process, EPA interprets Section 131.10 as necessarily recognizing a linkage between the existing use protection provisions and the established State or Tribal use classification system. This interpretation of the regulatory framework, however, also presumes a responsibility on the part of a State or Tribe to establish a classification system that is sufficiently flexible and/or

encompassing to assure an appropriate level of protection for the anticipated range of existing uses (see discussion on refined designated uses in this chapter).

As explained earlier in the discussion on refined designated uses, a variety of use classification systems has evolved and become established in State and Tribal programs. Although there are likely some advantages to a more refined use classification system when it comes to protecting existing uses (more precise categories in which to fit the existing use), such a system may not be necessary as long as the State or Tribal standards clearly articulate the intended and appropriate level of protection for existing uses (again, see discussion of refined designated uses). The following example illustrates the point. An acid bog is a water body type which may be fairly widespread but which, as a classification type, may not appear in many State or Tribal standards. Where the aquatic characteristics of an acid bog are discovered to constitute an existing use, a State or Tribe could: (1) establish a classification type and criteria for acid bogs to ensure appropriate protection by way of a specific designation, or (2) classify the bog within the existing, general classification system, e.g., warm water aquatic life, and adopt any needed site-specific criteria to ensure the existing nature and quality of this specific water resource is protected. Either approach can result in an appropriate level of protection and there may not be a need for States or Tribes to include an ''acid bog'' water body type in their classification system. Under either approach the standards must articulate clearly the intended and appropriate level of protection, ensuring protection of the existing use.

It is also important to remember that the existing use provisions in both §§ 131.10 and 131.12 must be considered together. The classification requirements in § 131.10 ensure that all existing uses will be recognized and protected through appropriate classification of those water bodies in the standards (and/or application of appropriate site-specific criteria where the existing classification system is broadly constructed). The antidegradation-based existing use protection provision guarantees that individual activities on individual water bodies will be examined to ensure those activities will not eliminate existing uses, whether or not those uses are currently recognized in the State or Tribal standards. The antidegradation provisions, through the general requirement that existing uses be protected, ensure immediate protection from specific activities which may threaten the existing use, and the classification requirements ensure recognition and longer-term protection from any present or future stressors through specific designation in the standards. Both these provisions apply and should not be considered in isolation. Together they constitute the existing use protection requirements, ensuring the existing uses and water quality to support those uses are maintained and protected.

The second question addresses the relationship between existing uses, existing water quality and potential uses. The Agency's guidance, Questions and Answers on Antidegradation, August, 1985 (Notice of Availability, 50 *FR* 34546, August 26, 1985 [included as appendices to *Water Quality Standards Handbook,* cited above]) addresses this issue, in part. The answer to ''question 7'' states: ''an existing use can be established by demonstrating that fishing, swimming, or other uses have actually occurred since November 28, 1975, or that the water quality is suitable to allow such uses to occur (unless there are physical problems which prevent the use regardless of water quality).'' Using an example of a healthy shellfish community which is not currently being harvested, the answer goes on to explain that the existence of a use (past or present) is not dependent solely upon a demonstration that the use is being satisfied in a functional sense (i.e., in this case, the shellfish harvested). In this example, ''shellfish harvesting'' is considered an existing use, even though there is presently no harvesting underway, because the water quality and habitat support a healthy shellfish community suitable for harvesting. The answer further explains that to assume otherwise ''* * *would be to say that the only time an aquatic protection use 'exists' is if someone succeeds in catching fish.'' As illustrated in this example, the existing use question must address both the current or past functional use *and* the current or past (since November 28, 1975) water quality, and the intent of the regulation is to ensure the existing use and the water quality necessary to support that use are maintained and protected. Thus, in this example, the shellfish harvesting use is to be protected by designated uses in water quality standards.

The shellfish example is a good one in that it clearly illustrates EPA's position that an existing use finding can be made either where the use is or has been ''actually attained'' or where the water quality necessary to support the use is in place even if the use, itself, is not currently established, as long as other site-specific factors, for example physical problems like flow or substrate, would not, despite the suitable water quality, prevent attainment of the use. The ''other factors'' caution is important in understanding EPA's position on existing uses. In making an existing use determination, there is a link between the use and water quality. To be considered an existing use, the use must have been actually attained in the past, is now attained or water quality is sufficient to support the use. However, for some sites, water quality, alone, may be an insufficient basis for making an existing use finding if there are other factors that would prohibit the use from taking place regardless of the quality of the water at a site. In the shellfish example, the necessary water quality is present, and there are no obvious limiting factors which would prohibit present or future shellfish harvesting.

Although this example is useful in illustrating important principles in implementing existing use protection requirements, it is a rather straightforward example. An appropriate resolution of the existing/designated use issue may be somewhat less clear-cut where either the existing water quality or the existing use is marginal (i.e., it is difficult to determine whether or not the use is actually attained, or whether or not there are factors, other than water quality, that could prohibit the use). It is in addressing these situations that questions have been raised about what the current regulation requires. A principal difficulty in addressing these questions may lie in resolving the linkage between the present and past conditions protected by the ''existing uses'' provisions and the attainable or potential condition protected by ''designated uses'' provisions. It may be useful to evaluate this issue by considering the link between existing and designated uses established in the current regulation.

Obviously, any decision about whether or not a use is an ''existing use'' must be a water body-specific determination. The existing use determination is, therefore, site-specific, and decisions should consider water quality and other limiting factors such as the physical habitat specific to a particular water body. A few examples may help illustrate the issue. A somewhat common existing use question applies to primary contact recreation: if a few people on a few occasions ''swim'' in a water body that does not have the quality or physical characteristics to support swimming, is this an existing use, even if the water body is posted ''no swimming'' due to

bacterial contamination and lacks the physical features to actually support swimming? The straightforward answer to this question is that ''swimming'' is not an existing use because the present (or past) condition does not support that use. This conclusion is based on the very limited actual ''use'' and, more importantly, the lack of suitable water quality and physical characteristics that would support a recreational swimming use now or in the future (as determined by the water quality requirements and recreational swimming considerations, including safety considerations, in the State or Tribal classification system for primary contact recreation).

A question has been raised as to how to interpret the regulation in the context of this example. One could determine that because the water body is not suitable for swimming, and has not been since 1975, primary contact recreation is not an existing use. Alternatively, one could determine primary contact recreation to be an existing use because the water body was actually used for swimming, even though the use was occasional and water quality and physical characteristics were not acceptable to support such a use. EPA believes the first alternative is the better interpretation of Agency regulations and guidance in this example, because the use is not established and the water quality and other factors would appear to prohibit actually attaining a recreational swimming use.

Stating that this is an appropriate interpretation of the regulation means that EPA would not object if a State or Tribe reached a conclusion, in a similar case, that this was not an existing use. As noted above, however, existing use decisions are very site-specific, and it is possible that, on a specific water body under similar circumstances, a different conclusion could be reached by a State or Tribe based on public comment at a hearing and a decision to take a protective approach to the incidental use for that specific resource. The Federal requirements do not prohibit a State or Tribe from taking a more protective approach than would be required by the water quality standards regulation.

Although, in the above example, a State or Tribe could conclude that primary contact recreation is not an existing use, it may well be an attainable use that must be protected as a designated use by the State's or Tribe's water quality standards. This finding would depend on whether the physical condition of the water body is suitable for swimming and whether the water quality problems limiting the use are controllable. (See 40 CFR 131.10(j) and discussion on use attainability analysis below). The point is that, although the existing use provisions most directly address past or present conditions, decisions about existing uses generally are not made in isolation. With respect to uses contained in CWA Section 101(a)(2), the regulation links existing and designated uses, and it may be useful to view these provisions as a continuum in examining the broader question of use protection.

Some States and Tribes have recognized that continuum in developing use attainability guidance for recreational uses which includes questions about the actual use, existing water quality, water quality potential, recreational facilities, location, safety considerations, physical conditions of the water body, and access

Note: access here means restricted access, as in fenced property; access is not intended to suggest the ''remoteness'' of the water body; in EPA's view, remoteness is not a valid basis for an attainability decision on recreation.

When all of these factors are considered, the adopted water quality standards are consistent with both the existing and designated use provisions. For example, suppose a city has created a greenway along a stream that receives wastewater effluent upstream of the greenway and has posted ''no swimming'' signs. The greenway attracts children leading to the inevitable ''unauthorized'' swimming. If the physical condition of the stream is suitable for swimming, the swimming occurs on a frequent basis and the greenway provides recreational facilities and access, the only factor limiting the use may be a water quality problem that in the judgement of the State or Tribe can be controlled to achieve the primary contact use. The linkage between existing and designated uses encourages the evaluation of this full suite of factors in making a decision about whether or not primary contact recreation should be protected.

A similar existing use question is often raised for aquatic life uses where the existing aquatic community is impaired as a result of marginal water quality. A common example in the western part of the country is a mountain stream impaired by historic hard rock mining (with the impacts occurring well before November 28, 1975). Although the physical condition of the stream may represent ideal trout habitat, the trout population may be severely limited, in poor condition or absent as a result of the toxic effects of metals. In its classification system, however, a State or Tribe may describe and designate this type of stream as a ''salmonid spawning'' use based on its physical habitat and potential. For streams such as these, where a few adult trout are present but there is no evidence of younger age classes, the question is asked—is this an existing ''salmonid spawning'' use?

Again, the appropriate answer, based on EPA regulations and guidance, is that this is not an existing use (although it may nonetheless be an appropriate designated use if it has the potential to support salmonid spawning). The current use, matching the classification description, is absent, and the limiting water quality problems have been in existence prior to November 28, 1975. (This does not mean, necessarily, there is not some existing aquatic life use which would then serve as the regulatory ''floor'' for this water body; see the ''limited'' aquatic life use discussion in the use attainability analysis discussion in this section below and the ''tier 1'' discussion in the antidegradation section, III. D) As in the ''swimming'' example, however, there can be a gradation of conditions, and occasionally it may be difficult to draw a bright line and conclude, with confidence, that this is where the existing use begins.

In situations similar to this impaired stream example, where the existing water quality problems are considered controllable by the State or Tribe, arguments have been made on both sides of the existing use issue: the salmonid spawning use is not existing, *or* the salmonid spawning use is in place, albeit currently at an impaired level. Disputes about the correct interpretation of Agency guidance become even more difficult to resolve where the existing impacts to water quality are not as great as those in the above example. Often streams impacted by historical mining, such as the one described above, are headwater streams. As the water moves downstream, clean water tributaries reduce the effect of the metals contamination, and fish, in number, begin to move into these ''improved'' waters. Nevertheless, many such streams would be considered impaired when compared to unaffected, similar waters (reference streams). And, despite supporting ''fairly good numbers'' of trout, the existing water quality in such streams often exceeds the chronic and, occasionally, acute standards for metals. In situations such as these, States and Tribes have had difficulty in reaching conclusions about whether or not an existing use, matching the classification, is in place. Because States and Tribes may evaluate existing uses when they are designating uses, threshold existing use

determinations may lead to questions about the potential for the water body and the appropriate designated uses for it.

EPA's current interpretation is that the existing use should be identified either where the use has taken place or the water quality sufficient to support the use has existed since November 28, 1975, or both. That is to say, State and Tribal existing use decisions can be based on a finding that the use, as defined in the classification system, and/or the water quality needed to support the use is in place (and there are no other factors that would prohibit actually attaining the use). This interpretation does not fully address the issue of partially impaired uses. Thus, a fuller explanation may be needed in the regulation or policy of how that interpretation is applied where the use or the water quality may be somewhat impaired. EPA is considering whether changes to the regulation or additional guidance is needed to explain the Agency's position and to offer direction in making such determinations.

Request for Comment on Existing Uses

EPA seeks comment on the following questions:

1. Does EPA need to further clarify the existing use protection provisions in § 131.10, more clearly explaining that existing uses are defined by the uses made of water bodies and existing water quality, where that quality is or was sufficient to allow the use to occur (and there are no other limiting factors)? If so, will the clarification require a regulatory amendment or can the needed clarification be accomplished in Agency policy or guidance?

2. Does EPA need to expand its guidance to explain how the current regulation addresses existing use decisions where there is some semblance of a use even though the water quality is insufficient to support the use in, for example a safe or healthful manner? Should this additional guidance clarify the linkage between existing and designated uses?

3. Should the regulatory definition of "existing use" at 40 CFR 131.3(e) be modified? If so, how?

4. Use Attainability.

a. Attainability of Uses. States and Tribes may remove a designated use, that is not an existing use, if they can demonstrate that attaining the designated use is infeasible. (40 CFR 131.10(g)) The current regulation identifies the factors that must be considered in making such a demonstration. As explained in the regulation, existing uses, by definition, are attainable and must be protected by designated uses in water quality standards (40 CFR 131.10(h)(1), 131.10(i) and 131.12(a)(1)). Further, at a minimum, uses are considered attainable if they can be achieved by implementing effluent limits required under Sections 301(b) and 306 of the Clean Water Act (Act) and by implementing cost-effective and reasonable best management practices (BMPs) for nonpoint source control. (40 CFR 131.10(h)(2)).

These existing uses, technology and BMP provisions establish the basic regulatory threshold test for what the attainable use of a water body is and thus what the minimum use designation for the particular water body must be. Where either the use is existing or the use can be attained through implementation of Clean Water Act technology requirements and/or implementation of applicable State requirements regarding BMPs for nonpoint source control, 40 CFR 131.10(h) establishes that the use is attainable and must be designated. Once a use is designated, it is presumed to be attainable and may not be removed (downgraded) unless the State or Tribe can demonstrate that attaining the designated use is not feasible based on one of the six use removal criteria (40 CFR 131.10(g)). Therefore, uses are considered attainable if: (1) the use is existing; (2) the use can be attained through application of CWA technology requirements and/or State or Tribe required BMPs; or, (3) none of the use removal criteria is satisfied. EPA has in the past recommended that these use removal criteria referenced under number 3 above, serve as additional tests, over and above numbers 1 and 2 above, for determining when a use is attainable. Clearly these use removal criteria (131.10(g)) are designed to determine whether a use is attainable and therefore can serve that purpose equally effectively when considering whether to remove a designated use (the situation where they are clearly required to be used) and when considering whether a use is attainable and should be designated. The discussion below on use attainability analysis (UAA) and non section 101(a)(2) uses further discusses the relationship between designation of attainable uses, UAAs, and the analysis required to justify use removal. That discussion solicits comment on whether the use removal criteria at § 131.10(g), in addition to being the regulatory justifications for use removal, should, consistent with EPA's interpretation of the regulation, be included in the basic elements of a UAA.

Despite what EPA believes are fairly clear guidelines in the current regulation and guidance, questions have been raised about EPA's minimum attainability requirements. The Agency's current thinking is that basic attainability requirements, the methods for demonstrating attainability, the circumstances under which attainability analysis must be done, and what that analysis must consist of should be clarified in the regulation.

b. Removal of Designated Uses. The regulation (at 40 CFR 131.10(g)) specifies that States and Tribes may remove a designated use which is not an existing use if attainment of a use is not feasible due to the following:

(1) Naturally occurring pollutant concentrations prevent the attainment of a use; or,

(2) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State or Tribal water conservation requirements to enable uses to be met; or,

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or;

(4) Dams, diversions or other types of hydrological modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of a use; or,

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or,

(6) Controls more stringent than those required by Sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

The use removal criteria were included in the regulation to address those circumstances where the attainability of certain uses would be precluded by conditions over which the water quality protection provisions in the regulation had little or no control. The uncontrollable conditions considered most likely to limit attainability were: natural water quality or habitat limitations, irretrievable human-caused contamination or conditions, or insupportable economic and social costs. These general

conditions, then, formed the basis for the six use removal criteria. Although EPA believes the use removal criteria have functioned reasonably well, the growing number and reoccurring nature of the questions raised about these criteria have convinced EPA of the need to review this central element of the program.

Some have argued that the six criteria and their interpretation are overly stringent, making any proposal to remove a designated use futile even where a use was ''mistakenly'' designated. Others argue that the use removal criteria and their interpretation are overly generous, granting the possibility of use removal where the principal stressor is a condition which should not be immune from the water quality protection provisions in the federal regulation (operation of dams is one example used in arguing this position). Others complain that there seems to be no national consistency in the way the use removal criteria are interpreted by EPA, the States or the Tribes. And, finally, questions also have been raised about whether or not the criteria adequately address or apply to all uses equally. The key to appropriate application of the use removal criteria is to focus on whether or not a condition, at a specific site, would preclude attaining a designated use. A decision on this question is not always straightforward however, and as a result, there are questions about the application of the use removal criteria. A few examples may help the discussion.

Criterion number 1 allows removal of a designated use where ''naturally occurring pollutant concentrations prevent attainment of the use.'' A reoccurring question about this provision is: under what circumstances should ''naturally occurring pollutant concentrations'' be the justification for use removal versus the basis for calculating site-specific criteria, acknowledging that the natural condition defines the existing use? Often, the numerical criteria assigned to the designated use are the initial benchmark for estimating whether or not a designated use will be attained. In this approach, a comparison of the natural condition with the numerical criteria is used in the evaluation of attainability. Where such an analysis demonstrates clearly that the naturally occurring pollutant concentrations would *preclude* the designated use, the use may be removed. There are, however, examples of situations where statewide or national criteria for one or more contaminants are exceeded, and yet the available information on the overall condition of the water indicate the use is supported. This situation is most common for aquatic life uses where local populations of aquatic organisms may have acclimated to natural conditions outside the estimated ''normal'' tolerance range, where species on the edge of their distribution are reproducing but are physiologically stressed or where broadly derived criteria may not be appropriate for the particular aquatic community at that site. In such a situation, the observed condition of the resource obviously will take precedence over the predicted condition, and the natural water quality will form the basis for site-specific criteria since the use is clearly not precluded. Again, the key to answering the use removal question is to determine whether or not ''natural conditions'' preclude attainment of the use, and because of the site-specific circumstances discussed above, answering this question involves more than a simple comparison of numeric criteria with the natural condition.

Criterion number 2 allows removal of a designated use where natural, ephemeral, intermittent, or low flow conditions would preclude the use unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State or Tribal water conservation requirements to enable uses to be met (emphasis added). Questions have been raised about exactly what the above italicized language means. EPA's interpretation of this phrase is that, where an effluent discharge creates an essentially perennial flow for what naturally would be ephemeral or intermittent waters, the resulting aquatic community is to be protected. EPA's current thinking is that in situations such as these, the second criterion for use removal means that a State or Tribe cannot remove a use of a water body where the augmented flow supports an aquatic life use.

Criterion number 4 allows removal of a use where dams, diversions or other types of hydrological modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of a use. As indicated above, some have argued that operation of dams is an inappropriate basis for concluding that Section 101(a)(2) uses are not attainable, and they have suggested this criterion be removed from the regulation. In arguing this position, these commenters have pointed to the 1986 amendments to the Federal Power Act (Electric Consumer's Protection Act, or ECPA) and the legislative history of these amendments as an indication of Congress' intent to give equal priority to protecting and restoring fish and wildlife habitat even where dams exist. Specifically, the ECPA states:

> * * *In deciding whether to issue any license the {Federal Energy Regulatory Commission}, in addition to the power and development purposes for which licenses are issued, shall give equal consideration to the purposes of energy conservation, the protection, mitigation of damages to, and enhancement of fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality. (ECPA amending the Federal Power Act, Section 4(e), 16 U.S.C. Section 797(e))

The legislative history, these commenters believe, provides a particularly clear indication of congressional intent to protect and restore aquatic life uses. They specifically point to that part of the record which states that no one ''expect[s] 'business as usual,' '' but rather the expectation is that:

> [P]rojects licensed years earlier must undergo the scrutiny of today's values as provided in this law and other environmental laws applicable to such projects. If nonpower values cannot be adequately protected, FERC should exercise its authority to restrict or, particularly in the case of original licenses, even deny a license on a waterway. (H.R. Rep. No. 99–934, 99th Cong., 2d Sess. (1986) at 22)

Groups arguing for removal of criterion 4 use the amendments to the Federal Power Act as an example of the recognition being given today's environmental values and the importance of restoring and enhancing the aquatic habitats and recreational uses of water resources. They maintain that ''...the Water Quality Rule should be updated to recognize that aquatic and recreational uses can not be removed based simply on the existence of a dam.'' EPA's current thinking is that the above rationale and legislative history raise a serious question about whether the existence of a dam and the infeasibility of operating that dam in a way that will result in attaining the designated use, measured against today's values, is sufficient reason to remove a designated use. EPA is interested in commenters views on this issue.

Criterion number 5 allows removal of a designated use where physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of

aquatic life protection uses. Notwithstanding the reference to aquatic life uses in 131.10(g)(5), some have argued that recreational uses, especially swimming uses, might also be limited by physical factors (especially where safety is an issue), and they have asked whether or not the physical factors consideration could be applied to evaluations of recreational use attainability. As now written, the regulatory language would not allow consideration of physical factors, alone, as the basis for removing a designated recreational use. In the preamble to the 1983 regulation, EPA explained that, while the Agency recognized that physical factors also affect recreational uses, States, and now Tribes, would need to give consideration to incidental uses of the water body even though it may not make sense to encourage use of a stream for swimming because of the flow, depth or velocity of the water. Instead, the preamble discussion explained that based on prudent public health considerations, the use protection question was not to be judged wholly on an analysis of the water body's suitability for swimming but rather on whether or not swimming would actually occur. EPA's current thinking is that physical factors, alone, would not be sufficient justification for removing or failing to designate a primary contact recreation use.

EPA's suggested approach to the recreational use question has been for States and Tribes to look at a suite of factors such as, the actual use, existing water quality, water quality potential, access, recreational facilities, location, safety considerations, and physical conditions of the water body in making any use attainability decision. The guidance suggests that any one of these factors, alone, may not be sufficient to conclude that designation of the use is not warranted. Nevertheless, there clearly are situations such as high flows caused by storm events where the physical conditions of a water body would make swimming, if not impossible, extremely dangerous. It is in addressing situations such as these that questions have been raised about the applicability of physical factors to the recreational use issue. The question is sometimes posed in terms of whether or not a State or Tribe would incur some liability by designating or continuing to designate such waters as swimmable. They argue that a reasonable, common sense approach is to acknowledge that there are certain waters for which primary contact recreation is not an attainable use solely because of the physical condition of the water. EPA is, therefore, considering whether the regulation or Agency guidance should be amended to allow consideration of physical factors, alone, as the basis for removing or not designating primary contact recreational uses.

The above discussion is about EPA's interpretation of the conditions that would have to be satisfied to either remove or not designate recreational uses. As explained earlier in this section, satisfying those conditions gives a State or Tribe the option of either removing or not designating the use. It does not, however, create an obligation. A specific example may help. A western State was concerned, partly for liability reasons, about designating swimming uses for a number of waters where the physical conditions and other factors made swimming, if it did occur, unwise. Although available information indicated the actual swimming use was limited or nonexistent, the State also wanted to ensure protection of that use, based on public health considerations, should it occur. The issue for the State was striking the appropriate balance between the two concerns: the possibility of inadvertently encouraging swimming where it should not occur because of safety considerations and protecting that use if it did occur. To resolve this issue, the State designated these waters for secondary contact recreation but assigned primary contact recreation bacteriological criteria to provide an appropriate level of protection should swimming occur, however unlikely. In this way, the State felt it did not inappropriately encourage swimming in these waters, but if swimming did occur, the required water quality would provide an appropriate level of protection. This is an approach to the "incidental use" issue, discussed in the existing use section of this chapter, that, while acknowledging uncertainty, errs on the side of protectiveness.

Consistency

EPA has provided guidance on implementing the requirements in § 131.10(g). Although EPA believes the guidance has been fairly comprehensive and has functioned reasonably well, the growing number and recurring nature of the questions raised about implementation of the use removal criteria have convinced EPA to solicit comments on the need for additional guidance or regulatory changes to ensure appropriate and consistent application of the use removal criteria.

As indicated in the introduction to this discussion, one of the reoccurring concerns about implementation of §§ 131.10(j) and 131.10(g) with respect to designating or removing uses, is that to some, there are instances of inconsistency in the way the § 131.10(g)(1)–(6) criteria are interpreted by EPA, the States or the Tribes. One example that has been cited is that the application of the fish consumption use is dissimilar in different regions of the country. In one area of the country, some maintain, the fish consumption use is applied to all waters assigned any aquatic life use without regard to whether or not there is a credible exposure pathway to humans by way of contaminated fish. In other areas of the country, the application of the fish consumption use allows consideration of occurrence, size and species of fish present and evidence that fishing actually occurs as a basis for concluding that there is a potential exposure pathway and the use should be designated. An associated consistency issue has to do with the manner in which the terms in § 131.10(g) are interpreted. An example is the term "feasible" in criterion number 4. Feasibility could be based on technical considerations, such as the ability to operate an impoundment in an efficient manner that does not degrade water quality, as EPA intended when it originally wrote the regulation. Alternatively, some have suggested that feasibility could be based on economic considerations or a balanced consideration of cost and technology (EPA's current thinking is that the term "feasible" in use removal criterion number 4, regarding the operation of dams should continue to refer to technical feasibility and not to economic feasibility. Criterion number 6, not number 4, is the appropriate avenue to address economic feasibility of attaining the designated use because it establishes an appropriate test of economic infeasibleness.)

EPA's view is that the use removal criteria should be clear and consistently interpreted. Questions and/or positions such as those described above suggest there may be a need for additional guidance on or interpretation of § 131.10(g) to ensure the § 131.10(g) criteria are consistently interpreted and applied, and to address whether review under § 131.10(g) could be done for categories of sources.

c. Use Attainability Analysis. A use attainability analysis (UAA) is a structured scientific assessment of the factors affecting the attainment of uses specified in section 101(a)(2) of the Act (the "fishable/swimmable" uses). The factors to be considered in such an analysis include the physical, chemical, biological, and economic use removal

criteria described in the current regulation (40 CFR 131.10(g)(1)–(6)). The current regulation (40 CFR 131.10(j)) establishes the requirement that States and Tribes conduct a UAA when designating uses that do not include the section 101(a)(2) uses, removing section 101(a)(2) uses, or designating new subcategories of section 101(a)(2) uses that require less stringent criteria.

New Information for Waters Without Section 101(a)(2) Use Designations

The current regulation (§ 131.20(a)) specifically requires the re-examination of water bodies with less than Section 101(a)(2) use designations every three years to determine if new information has become available. If new information indicates that a use is attainable, the State or Tribe is to revise the use accordingly. EPA interprets the current regulation as requiring review of past UAA-based use designation decisions when there is new information that could have a bearing on that use designation decision.

The 1983 preamble to the regulation explained that a State or Tribe need only conduct a UAA once for a given water body. The preamble went on to explain, however, that where the UAA is used as justification for removing a section 101(a)(2) use or failing to designate a section 101(a)(2) use, the State is required to review the basis for that decision in subsequent triennial reviews to determine whether or not the circumstances have changed in a way that would alter the original decision. EPA recognizes that the requirement to review new information about past UAA-based use designation decisions, because it creates a demand for further analysis of the decision by the State or Tribe, can serve to discourage States and Tribes from generating new information. EPA's current thinking is that interested parties should be encouraged to generate and consider relevant information that could have a bearing on the use designation decision for a particular water and that the trigger for reviewing past use designation decisions should be clear. In addition, EPA is interested in comments on whether there should be some definable burden placed on the State or Tribe to actively seek information for such waters. The Agency may need to be more specific in requiring that States and Tribes specify the procedures they will use in identifying water bodies where "new information" has become available and ensuring new information is generated where appropriate.

UAAs and Non Section 101(a)(2) Uses

The current regulation indicates that the UAA requirements apply to uses specified in Section 101(a)(2) of the Act. The regulation at 40 CFR 131.10(j) specifically requires that a State or Tribe conduct a UAA where: "(1) the State [or Tribe] designates or has designated uses that do not include the uses specified in Section 101(a)(2) of the Act, or (2) the State [or Tribe] wishes to remove a designated use that is specified in Section 101(a)(2) of the Act or to adopt subcategories of uses specified in Section 101(a)(2) of the Act which require less stringent criteria." Although the regulation at 40 CFR 131.10(g) has always provided that States and Tribes may not remove a designated use unless they can demonstrate that attaining the use is not feasible, the regulatory language does not expressly require the State or Tribe to conduct a UAA as defined in 40 CFR 131.10(j) before a use not referenced in section 101(a)(2) may be removed. As a result, some have questioned whether or not the UAA requirements actually apply to uses other than those referenced in Section 101(a)(2), such as water supply or agriculture. EPA's position on this issue is that, while the analysis to downgrade a use not included in CWA section 101(a)(2) is not expressly referenced in § 131.10(j), 40 CFR 131.10(g) of its own terms requires the State or Tribe to document whether any use being considered for removal is attainable under the six criteria outlined in that section. Where such a use is shown to be attainable, it may not be removed (downgraded). In practice, EPA believes there is no cognizable difference between these two analyses. EPA is thus considering whether it should combine these elements of 40 CFR 131.10(g) and 131.10(j) or otherwise clarify the relationship between these provisions in the regulation. Given EPA's position that the regulation requires the use attainability of a water body to be documented before any of its uses may be removed, EPA is interested in a discussion of specific attainability issues that might arise in applying the UAA requirements to non-Section 101(a)(2) uses such as water supply or agriculture.

Information in UAAs

The regulation is not specific about what a UAA should contain other than the general description contained in the definition of a UAA at 40 CFR 131.3(g). Instead, EPA has issued various national and regional guidance documents to assist with the completion of such analyses. Some have suggested, however, that the regulation be amended to provide more specificity on information needed in a UAA. Topics for consideration might include: what specific questions should a use attainability analysis address? what are the data requirements? and what are the requirements for reporting the results of the analysis? EPA seeks comment on this issue.

UAAs and Refinement of "Fishable/Swimmable" Use Designation

As long as a State or Tribe designates uses that fall within the broad range of uses consistent with the section 101(a)(2) goals, there is no requirement to conduct a UAA. In fact, 40 CFR 131.10(k) explicitly states that "a State is not required to conduct a use attainability analysis . . . whenever designating uses which include those specified in section 101(a)(2) of the Act." As a result, there does not appear to be a mechanism that ensures State or Tribal waters are not under-classified (i.e., a use subcategory is designated for a water when a higher or more protective subcategory is actually attainable). Some have suggested that the regulation be amended or guidance clarified to require a UAA (i.e., a structured scientific assessment) whenever an aquatic life use is designated (or refined) to ensure the level of protection assigned matches the potential for the water body. EPA's current thinking is that there needs to be a solid underlying rationale for use designations. One of the emerging themes from EPA and the larger community of parties interested in further protecting water quality is that refining designated uses and tailoring suites of criteria to the refined uses in watersheds is an important future direction of this program. Clearly for this approach to succeed, a solid evaluation of attainability must be at the heart of any decision to characterize designated uses in greater detail than has been the norm. EPA is interested in comment on this view, in particular as it relates to the rebuttable presumption that the generic uses described as fishable/swimmable are attainable.

Thresholds for Aquatic Life Use Designation

In part 2 of this section, "Refined Designated Uses", there is a discussion explaining EPA's position that the definition of "aquatic life" is not limited to those waters that support "fisheries." That discussion explains that a more biologically-grounded definition of aquatic life would be sufficiently expansive to include aquatic communities made up, for example,

entirely of invertebrate organisms. This broad definition of ''aquatic life uses'' has an impact on the manner in which UAAs are planned and evaluated. The current regulation allows States and Tribes to designate uses for certain waters that do not include the section 101(a)(2) uses, where such uses are not attainable. As a result, some States and Tribes have waters which have not been assigned an aquatic life designated use. However, if aquatic life uses are defined broadly, as EPA believes they should be, there would be very few, if any, waters that would not be considered as supporting some type of existing aquatic life use.

Aquatic communities form a continuum, making it difficult, if not impossible in the biological sense, to identify where the threshold for aquatic life use begins. As a result, some have suggested that a broad definition of aquatic life would appear to revoke the option of excluding aquatic life protection from a water body since essentially all waters support some level of aquatic life. They have suggested, therefore, that there is a need to identify a threshold, based on some physical rather than biological limitation, that could be used as an acceptable justification for concluding that an aquatic life use is not attainable. For example, some States and Tribes have urged the use of a flow-based threshold to justify a conclusion that an aquatic life use in not attainable. Generally, ephemeral waters (waters whose channel does not intersect the ground water table and which are dependent on precipitation events for their flow) are suggested as an appropriate threshold. In a biological sense, this may not be a satisfactory solution since there are ecologically important ephemeral waters which should receive aquatic life use protection regardless of the temporal nature of the flow. This is especially true for many ephemeral wetlands. EPA is considering whether changes are needed in the regulation or guidance to address whether, and under what circumstances, UAAs may be used to justify a non-aquatic life use classification, given the broad range of aquatic communities that may exist.

Request for Comments on Use Removal and Use Attainability

EPA seeks comment on the following questions:

1. Although EPA believes the use removal criteria in § 131.10(g) have functioned reasonably well, questions have been raised about the applicability of specific section 131.10(g) criteria and the manner in which EPA interprets those criteria. EPA seeks comment on the use removal criteria. Are the six criteria sufficiently comprehensive or should other factors be considered as a basis for removing designated uses? Are the criteria too comprehensive and are certain of the criteria inappropriate as a basis for designated use removal? Is there a need to modify the existing criteria to more clearly address the full range of use removal issues that have developed since the regulation was originally published?

2. Even with the statements in the current regulation, questions have been raised about the minimum requirements of a use attainability analysis. Is there need for further clarification in guidance, policy or in the regulatory text on this issue?

3. Triennial review of UAA-based use designations that do not include section 101(a)(2) uses, are currently triggered only when new information becomes available. Should EPA require that States and Tribes specify procedures they will use in identifying what constitutes new information and thus when the review of the UAA-based use designations is required?

4. Although 40 CFR 131.10(g) requires an assessment of attainability before removal of any designated use, the regulatory language does not expressly require an analysis called a UAA as specified in 40 CFR 131.10(j) any time a State or Tribe seeks to designate a non section 101(a)(2) use. EPA, however, believes that the analysis under either provision is equivalent. Should the current regulation be revised to clarify that the UAA requirements apply to any ''downgrade'' of a use and not just the CWA Section 101(a)(2) uses? Can any needed clarification be achieved through guidance or policy? EPA would be interested in comments on factors to be considered in evaluating the attainability of non Section 101(a)(2) uses, such as water supply or agricultural uses which generally take place after the water is diverted from the natural water body.

5. How should the water quality standards regulation, guidance or policy be modified to provide more specificity on appropriate factors to consider in developing a use attainability analysis?

6. In order to ensure the present aquatic life use designation (or use subcategory) matches the attainable level of aquatic life use in a water body, should the water quality standards regulation, policy or guidance be modified to clarify that a periodic review of designated uses is required where a State or Tribe has designated only marginal or limited aquatic life uses?

7. Are changes needed in the water quality standards regulation, policy or EPA guidance to address whether, and under what circumstances, use attainability analyses may be used to justify a non-aquatic life use classification, given the broad range of aquatic communities that may exist?

d. Alternatives to ''Downgrade'' of the Designated Use. As discussed above, where a State or Tribe believes that a particular designated use is not attainable, States and Tribes have the option of refining a water body's designated use, for example by creating subcategories of the use and describing the use in more detail. A subcategory can, and may need to be, water body-specific if the State's or Tribe's use classification system is not sufficiently precise to accommodate the subcategory of designated use for the water body in question. States and Tribes also have the option of removing the designated use and replacing the removed use with a new one that, under the regulation, reflects attainable conditions in the water body. Use removal and to a lesser extent refinement are also commonly referred to as use ''downgrade.'' Both of these options, refinement and removal of the designated use, are not time-limited. That is, the designated use that results from exercising either of these options becomes the new goal use of the water body. In the following discussion, three alternatives to use downgrade that have been used by States are presented. They are variances, temporary standards, and ambient-based criteria. These alternatives are less ''draconian'' than use downgrading in the sense that they can provide adjustments to particular aspects of the standards—*i.e.*, to the criteria for particular pollutants or the criteria as applied to certain dischargers—without changing the designated use and the full suite of criteria to protect the designated use. EPA's current thinking is that often the attainable condition of particular water bodies is not well understood due to uncertainty about expected results of water quality improvement actions. In such situations, EPA believes it may be appropriate to implement water quality protection actions, assess the results of those actions, and implement additional measures where necessary to continue to improve water quality. EPA believes that iterative assessment and implementation in these types of situations is probably the best way to gain an understanding of the ultimate attainable condition of the water body. The mechanisms described below may be well-suited to this situation because they leave the designated use of the

water body, the ultimate goal, in place while providing a defined period of time (in the case of variances and temporary standards) to document, through implementation and assessment, the water quality improvements that are possible through various measures and thus, the attainability of the goal.

i. Variances. One option authorized under the regulation that is used by some States or Tribes is the water quality standard variance. A variance is a short-term exemption from meeting certain otherwise applicable water quality standards. EPA authorizes States and Tribes to include variances in their water quality standards. (see 40 CFR 131.13). Agency guidance on variances identifies what the Agency believes to be the essential elements of a variance:

—a variance should be granted only where there is a demonstration that one of the use removal factors (40 CFR 131.10(g)) has been satisfied;
—a variance is granted to an individual discharger for a specific pollutant(s) and does not otherwise modify the standards;
—a variance identifies and justifies the numerical criteria that will apply during the existence of the variance;
—a variance is established as close to the underlying numerical criteria as is possible;
—a variance is reviewed every three years, at a minimum, and extended only where the conditions for granting the variance still apply;
—upon expiration, of the variance, the underlying numerical criteria have full regulatory effect;
—a variance does not exempt the discharger from compliance with applicable technology or other water quality-based limits; and
—a variance does not affect effluent limitations for other dischargers.

With these safeguards in place, the principal difference between a variance and a downgrade of a designated use is that a variance is temporary. That is, when the variance expires, an affirmative showing would be needed to continue it, or the underlying standards are applicable. Because a variance is temporary, it actively supports the improved water quality goal, and it can, under appropriate circumstances serve as an environmentally preferable alternative to what otherwise might become a permanent change in a designated use.

Historically, the intent of the variance provision has been to: provide a mechanism by which permits can be written to meet a modified standard where discharger compliance with the underlying water quality standard is demonstrated to be infeasible within the meaning of § 131.10(g) at the present time (e.g., meeting the standard would cause substantial and widespread social and economic impact); encourage maintenance of original standards as goals rather than removing uses that may be ultimately attainable; and ensure the highest level of water quality achievable during the term of the variance.

EPA has approved State and Tribal use of variances when the individual variance is included in State or Tribal water quality standards, each variance is subject to the same public review as other changes in water quality standards, the State or Tribe demonstrates that meeting the standard is unattainable based on one or more of the grounds listed in 40 CFR 131.10(g) for removing a designated use, existing uses are protected, the variance secures the highest level of water quality attainable short of achieving the standard and the State or Tribe demonstrates that advanced treatment and alternative effluent control strategies have been considered (See 48 FR 51400, 51403 (Nov. 8, 1983); Water Quality Standards (WQS) Handbook at 5–12; Memorandum from EPA's Office of Water, ''Variances in Water Quality Standards,'' March 15, 1985; and Decision of the General Counsel No. 58, In Re Bethlehem Steel Corporation, March 29, 1977).

The Preamble to the 1983 water quality standards regulation revision suggested that substantial and widespread social and economic impact, the sixth element for use removal under § 131.10(g), is an important and appropriate test that, if met, could be used as the basis for granting a variance (see 48 *FR* 51403). Subsequently, on March 15, 1985, EPA issued further guidance on the conditions under which a variance might be granted. The 1985 EPA Office of Water guidance explained that it would be appropriate to grant short-term variances to individual dischargers based on any of the six factors for removing a designated use as listed at § 131.10(g). As variances represent a temporary downgrade in the water quality standards, EPA reasoned that more stringent treatment of variances than permanent downgrades would not be appropriate. In practice, however, the only factor that is commonly used to grant a discharger-specific variance is the economic test. The Office of Water guidance continued to interpret variances as being limited to individual dischargers.

In ''Guidance for State Implementation of Water Quality Standards for CWA Section 303(c)(2)(B)'' (December 1988; Notice of Availability published at 54 FR 346, January 5, 1989), EPA recommends that States and Tribes adopt a variance provision whenever adopting statewide or tribe-wide criteria for a large number of toxic pollutants for human health or aquatic life protection. The rationale behind this recommendation was to avoid unreasonable consequences from adopting State- or Reservation-wide criteria which could underestimate or overestimate the toxic potential of some pollutants in a specific water body.

The Water Quality Guidance for the Great Lakes System (Great Lakes Guidance) published March 1995 by EPA (56 FR 15366, March 23, 1995; 40 CFR section 132) contains provisions allowing for variances from water quality standards. Variances granted under the Great Lakes Guidance are pollutant-specific and point source-specific and are limited to five years or the term of the NPDES permit implementing the variance, whichever is less. Variances may be granted for any of the reasons listed at 40 CFR 131.10(g) for which a use downgrade may be considered. Like all revisions to State or Tribal water quality standards, EPA review and approval is required of any variance granted by a State or Tribe and variances may be renewed following the same procedure originally used for applying for a variance. Variances are also subject to review as part of a State's or Tribes triennial review of water quality standards. Multiple discharger variances (a variance that applies to multiple point sources discharging to the same water body) are also allowed under the Great Lakes Guidance. Variances granted under the Great Lakes Guidance provisions may not jeopardize the continued existence of any Federally listed threatened or endangered species. Further, under the Guidance, variances are not available for new or recommencing discharges. A recommencing discharge is a source that recommences discharge after terminating operations. (40 CFR 122.2).

The Great Lakes Guidance was developed in concert with many other provisions addressing designated uses, criteria, antidegradation and various implementation policies for the Great Lakes States and Tribes. Any evaluation of the level of protection afforded water quality under the Great Lakes Guidance variance procedures should be made in the context of the Great Lakes Guidance as a whole. Similarly, the water quality standards regulation is more than simply the sum of its parts. Any

approach to the implementation of water quality standards variances must be evaluated in the context of the entire regulation.

EPA is considering whether implementation of the variance provision has been a useful component of the water quality standards program, and the overall program for protection of water quality standards. In 1990, EPA conducted a survey of State variances and variance provisions (National Assessment of State Variance Procedures, Report, November 1990, Office of Water Regulations and Standards). This study showed that variances had been granted on a very limited basis. In fact, only 16 out of 57 States and Territories had granted variances and some of those had done so infrequently. EPA lacks detailed information on why variances are not being significantly utilized in most States and Tribes. EPA is interested in information regarding alternative mechanisms that are being used by States or Tribes in lieu of variances to provide necessary short term and temporary relief from applicable criteria, and how any alternative approaches address the feasibility of ultimately attaining the criteria associated with the underlying designated use.

EPA is considering whether it would be useful to include in the regulation more explicit language reflecting current EPA thinking and practice regarding variances. As explained above, in order to issue variances, States or Tribes must include variances as part of the State's or Tribe's water quality standards. EPA believes, however, that in some instances States may be misusing variances. For example, over the years, there have been instances where a State has improperly granted a "variance" from compliance with NPDES permit limits, failing to include these variances within the water quality standards themselves. There has also been some confusion regarding the necessity of formal adoption of individual variances into State and Tribal water quality standards and whether the public participation process associated with NPDES permit issuance sufficiently addresses those same needs for variance adoption. EPA is also considering whether to specify the degree to which individual dischargers must document the continued need for a variance before the variance can be renewed at each triennial review. EPA is considering whether the water quality standards regulation should provide more specific guidelines on the use and content of variance policies. EPA's current thinking is that the regulation may need to articulate certain aspects of variances more explicitly, including:

—explicit reference to the criteria listed in 40 CFR 131.10(g) as the criteria for granting a variance;
—explicit statement that the granting of a variance may not result in any loss or impairment of an existing use;
—explicit statement that before a variance can be granted, the applicant must provide documentation that treatment more advanced than that required by sections 303(c)(2)(A) and (B) of the CWA has been carefully considered, and that alternative effluent control strategies have been evaluated and reasonable progress is being made toward meeting the underlying or original standards;
—explicit statement requiring the highest level of water quality achievable under the relaxed, interim standard during the period of the variance.
—explicit statment that a variance shall not be granted if standards will be attained by implementing cost-effective and reasonable best management practices for nonpoint source control.

EPA believes that such a clarification of its policy regarding variances could serve to encourage proper use of variances by States and Tribes while at the same time reducing the possibility of inappropriate use.

ii. Temporary Standards. As indicated in the discussion on variances above, the 1985 EPA Office of Water guidance explained that it would be appropriate to grant short-term variances to individual dischargers based on *any* of the six factors for removing a designated use as listed at § 131.10(g). Of the six use removal factors, the first five address water quality and habitat features of the water body as a whole. These same factors are not, however, ideally suited to making decisions about the capabilities of individual dischargers. For example, it is not immediately clear how use removal factor five, "physical conditions related to natural features of a water body * * * preclude attainment of a use", could be applied to a decision about an individual discharger. On the other hand, the sixth factor, the substantial and widespread economic and social impact factor, is well suited to decisions about individual dischargers which explains why the economic hardship test has been historically applied in evaluating variances.

Several States have applied factors similar to the first five use removal factors in establishing variances for entire water body segments or portions of water body segments. These States sometimes refer to these as "temporary standards" or "temporary modifications". This has been done where the problems in a water body are significant and widespread, involving point and nonpoint sources of pollution and their impacts on water quality and habitat, that is waters significantly impaired by multiple sources and not just one or a few point sources. For example, where historic mining practices have severely impaired both water quality and habitat throughout a headwater basin, temporary standards have been used. Rather than downgrading these waters, the States have applied temporary standards with specific expiration dates for certain pollutants affected by the historic mining practices. In this way, the States have maintained designated uses and underlying criteria for other pollutants, while recognizing that existing ambient conditions for certain pollutants are not correctable in the short-term. In such cases, the temporary standards provide a basis for permit limits in the shorter-term. The temporary standards approach is then used by these States as the basis for remediation of damaged water resources because the underlying designated use and criteria to protect that use actively drive water quality improvements in the longer-term. EPA Regional Offices have approved the use of such temporary standards.

Temporary standards have been implemented to date with little specific Agency guidance on a water body approach to variances. EPA is considering whether the water quality standards regulation or guidance should specifically address temporary standards. EPA's current thinking is that if the regulation or Agency guidance were to specifically address temporary standards, such regulation or guidance would need to address certain relevant issues including: application criteria to be used in deciding which waters might qualify for temporary standards; a way of identifying the existing, impaired water quality conditions; a mechanism for specifying the water quality needed to fully attain the anticipated uses; and a plan and driving mechanism aimed at achieving needed water quality and habitat improvements to fully support compliance with the designated uses.

Where EPA has provided guidance to individual States on use of State temporary standards provisions, EPA has advised that any temporary standard should:

—be granted only where there is a demonstration that one of the use removal factors (40 CFR 131.10(g)(1) through (6) has been satisfied;

—be granted for a specific water body or portion of a specific water body as defined in State standards;
—identify and justify the numerical criteria that will apply during the existence of the temporary standard and identify a ''remediation plan'' aimed at compliance with the underlying designated uses and criteria;
—be established as close to the underlying numerical criteria as is possible;
—be reviewed every three years, at a minimum, and extended only where the conditions for granting the temporary standard still apply;
—be in effect only for the specified term of the temporary standard (or extension thereof), and upon expiration of the temporary standard, the underlying numerical criteria have full regulatory effect;
—not exempt any discharge to the water body from compliance with applicable technology or water quality-based limits (based on the temporary standards) or best management practices;
—not apply to any new discharger to the water body; and
—protect existing uses.

EPA is considering whether the use of temporary standards represents a viable alternative to use refinement or removal. EPA is also considering whether the regulation or guidance should explicitly address use of temporary standards, including specific limitations on the use of temporary standards like those listed above.

iii. Ambient-based Criteria. On a limited basis, States have developed and EPA has approved ''ambient-based criteria.'' These ambient-based criteria have been developed for specific water bodies and pollutants where such criteria are shown to protect the designated use and the existing use. EPA believes that ambient-based criteria can be preferable to a ''downgrade'' of a use because the underlying designated use is retained and because they may be limited to only a small subset of pollutants.

EPA has issued a policy memorandum concerning one type of ambient-based criteria, site-specific criteria for aquatic life protection that are based on natural conditions. (See Memorandum from Tudor T. Davies, Director Office of Science and Technology, Subject: Establishing Site-Specific Aquatic Life Criteria Equal to Natural Background, November 5, 1997.) This policy states that States and Tribes may establish site-specific aquatic life criteria equal to natural background conditions, but such criteria must be scientifically defensible. Additionally, the State's or Tribe's water quality standards should contain or provide specific authority for site-specific criteria based on natural background. States and Tribes should also identify procedures for determining natural background. EPA's current policy also states that the State or Tribal procedure for determining natural background needs to be specific enough to establish natural background concentration accurately and reproducibly. States and Tribes should also provide for public notice and comment on the provision, the procedure and the site-specific application of the procedure. The States or Tribes will also need to document the resulting site-specific criteria in its water quality standards, including specifying the water body segment the site-specific criterion applies to. This can be accomplished through adopting the site-specific criteria into the State and Tribal water quality standards, or, alternatively by appending the site-specific criteria to the water quality standards.

In addition, a second approach that some States have used and EPA has approved is where the State or Tribe could have met the test for downgrading a use under 40 CFR 131.10(g)(3) *i.e.,* ''Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place'', but instead of downgrading the use, the State or Tribe established certain criteria based on ambient conditions where those ambient conditions were shown to be irreversible. In addition to assuring that the existing use is protected, EPA is interested in assuring that where the ambient concentration of a pollutant cannot be improved, *i.e.,* it is irreversible, that such condition be maintained and not made worse. When this occurs, EPA believes that for other pollutants in the same water body for which applicable criteria are being or can be met, those criteria should remain in place and not be made less protective via a use downgrade. EPA's current thinking is that the ambient-based criteria need to be the best attainable. In addition, EPA's current thinking is that in order to establish ambient-based criteria, the State or Tribe should conduct an analysis equivalent to a use attainability analysis for a downgrade that should include a thorough description of the biota that will be protected via applicable water quality criteria (both the unchanged pre-existing criteria and the ambient-based criteria).

EPA is interested in hearing comments regarding these ambient-based criteria mechanisms, and specifically whether the regulation should discuss these mechanisms more specifically, and whether the regulation should be more explicit about the biological evaluation necessary to describe the aquatic life use being protected. EPA is also interested in comments on whether the other relief mechanisms based on the § 131.10(g) reasons, such as variances and temporary standards, should also require criteria which reflect the best attainable conditions.

Request for Comments on Alternatives to Downgrading a Designated Use

EPA seeks comment on the following questions:

1. EPA requests comment on whether variances, temporary standards and/or ambient-based criteria can under certain circumstances offer an environmentally preferable alternative to refinement or removal (downgrade) of the designated use? Under what circumstances?

2. Does the current water quality standards regulation or Agency guidance or policy discourage persons from seeking variances and/or discourage States and Tribes from granting variances (including temporary standards)? What components of the procedures are most problematic?

3. Reflecting EPA's current interpretation of the regulation, should the regulation make explicit that individual variances and temporary standards must be documented in a State's or Tribe's water quality standards before implementation as part of NPDES permits?

4. Reflecting EPA's current interpretation of the CWA and the regulation, should the regulation contain express reference to the factors listed in 40 CFR 131.10(g) as the criteria under which a variance (including temporary standards) from water quality standards will be allowed? Should any of these factors be deleted? Should any new factors be added?

5. Reflecting EPA's current interpretation of the CWA and the regulation regarding existing uses, should the variance portion of the regulation at 40 CFR 131.13 underscore that the granting of a variance must not result in any loss or impairment of an existing use, for example by cross-referencing the requirement at 40 CFR 131.12(a)(1) that existing uses must be protected?

6. To reflect current practice and EPA guidance, should the regulation be

amended to require documentation by either the applicant or the State or Tribe demonstrating that treatment more advanced than that required by sections 303(c)(2)(A) and (B) of the CWA has been carefully considered, and that alternative effluent control strategies have been evaluated and reasonable progress is being made toward meeting the underlying or original standards?

7. Should the regulation require that States and Tribes document in their water quality standards the criteria that are applicable to the water body or segment thereof during the period of a variance or temporary standards?

8. Should the regulation discuss ambient-based criteria mechanisms more specifically?

9. Should the regulation be more explicit about the biological evaluation necessary to describe the aquatic life use being protected where ambient-based criteria are used?

10. EPA is also interested in comments on whether the other relief mechanisms based on the § 131.10(g) reasons, such as variances and temporary standards, should in the regulation, expressly be required to require criteria which reflect the best attainable conditions?

11. Do the alternatives to use removal help address pulsed or intermittent impacts, such as those from urban and rural runoff?

C. Criteria

The following section discusses water quality criteria in the water quality standards programs. EPA is considering the implementation of and effectiveness of different types of criteria and on the desirability of changes to the water quality standards regulation as it pertains to criteria. The scope of the criteria section includes all Clean Water Act criteria for which EPA has issued national criteria guidance, and several types of criteria for which there is no national criteria guidance but where criteria guidance and policy are being contemplated.

1. Background

Water quality criteria are levels of individual pollutants or water quality characteristics, or descriptions of conditions of a water body that, if met, will generally protect the designated use of the water. EPA, under section 304(a) of the Act, periodically publishes recommendations (guidance) for use by States and Tribes to set water quality criteria. Water quality criteria are developed to protect aquatic life and human health, and in some cases wildlife, from the deleterious effects of pollutants and other effects of pollution. There are three principal categories of water quality criteria: criteria to protect human health, criteria to protect aquatic life, and criteria to protect wildlife. Within these broad categories, there are different types of criteria, for example within the human health category, there are chemical-specific and microbiological criteria. Within the aquatic life category, there are chemical-specific criteria, toxicity criteria, biological criteria, sediment criteria and physical criteria such as habitat and flow balance. These criteria may be expressed in either narrative or numeric forms. Many of these criteria may be developed to apply generally, or they may be developed to apply to site-specific situations. The CWA section 303(a)–(c) requires all States, and any Tribe that has water quality program authority, to evaluate the need for water quality criteria to protect a designated use and then adopt water quality criteria (either EPA's or its own) sufficient to protect uses designated for State or Tribal waters. Economic and technological factors (e.g., the ability of analytical techniques to detect the pollutant and treatment cost considerations) may not be used to justify adoption of criteria that do not protect the designated use.

Narrative criteria are descriptions of conditions necessary for the water body to attain its designated use. Often expressed as "free from" certain characteristics, narrative criteria can be the basis for controlling nuisance conditions, e.g. floating debris or objectionable deposits. Narrative criteria are often the basis for limiting toxicity in discharges. States and Tribes establish narrative criteria where numeric criteria cannot be established or to supplement numeric criteria under 40 CFR 131.11(b)(2). When a water body is classified for more than one use, criteria necessary to protect the most sensitive use must be applied to the water body. 40 CFR 131.11(a).

CWA section 304(a) directs EPA to develop criteria guidance. These criteria recommendations assist States and Tribes in developing water quality standards. The AWQC are published pursuant to Section 304(a)(1) of the CWA which states:

> The Administrator * * * shall develop and publish * * * (and from time to time thereafter revise) criteria for water quality accurately reflecting the latest scientific knowledge (A) on the kind and extent of all identifiable effects on health and welfare including, but not limited to, plankton, fish, shellfish, wildlife, plant life, shorelines, beaches, esthetics, and recreation which may be expected from the presence of pollutants in any body of water, including ground water; (B) on the concentration and dispersal of pollutants, or their byproducts, through biological, physical, and chemical processes; and (C) on the effects of pollutants on the biological community diversity, productivity, and stability, including information on the factors affecting rates of eutrophication and rates of organic and inorganic sedimentation for varying types of receiving waters.

Pursuant to section 304(a), EPA has developed to date, aquatic life criteria guidance for 31 chemicals and human health criteria guidance for 100 chemicals. For the most part, States and Tribes have found such EPA criteria guidance useful in setting standards to protect designated uses. Since 1980, most States and Tribes have adopted at least some of the criteria guidance published by EPA pursuant to CWA section 304(a). However, EPA's resources available to develop criteria guidance are limited. Thus, there are cases where the scientific information or data necessary to develop criteria exist but EPA has been unable to establish section 304(a) criteria guidance.

States and Tribes may establish numeric criteria using CWA section 304(a) criteria guidance, section 304(a) criteria guidance modified to reflect site-specific conditions, or other scientifically defensible methods. 40 CFR 131.11(b)(1). There are situations where EPA relies on the 304(a) criteria guidance when promulgating replacement standards for a State or Tribe pursuant to section 303(c). EPA promulgation of 304(a) criteria for States or Tribes is discussed in more detail below.

Numeric criteria are values expressed as levels, concentrations, toxicity units, or other numbers deemed necessary to protect designated uses. Water quality criteria developed under Section 304(a) are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. EPA criteria under section 304(a) do not reflect consideration of economic impacts or the technological feasibility of meeting the chemical concentrations in ambient water. As discussed below, 304(a) criteria are used by States and Tribes to establish water quality standards, and ultimately provide a basis for controlling discharges or releases of pollutants.

Numeric criteria are important because they provide a proven effective basis for implementation of the CWA. For example, these criteria often form the basis for NPDES water quality-based permit limits for point source dischargers and for establishing TMDLs for a water body as a whole. Numeric criteria can also be useful in assessing

and managing nonpoint source pollution problems.

The Act uses the term ''criteria'' in two separate ways. In section 303(c), the term is part of the definition of a water quality standard. That is, a water quality standard is comprised of designated uses, and the criteria necessary to protect those uses. Thus, States and Tribes are required to adopt regulations that contain legally enforceable criteria. However, in section 304(a) the term ''criteria'' is used in the scientific sense. That is, under section 304(a), EPA develops scientifically sound criteria guidance which may form the basis for State, Tribal or Federal adoption of water quality standards pursuant to section 303(c). Thus, two distinct purposes are served by the section 304(a) criteria. The first is as guidance to the States and Tribes in the development and adoption of water quality criteria that will protect designated uses, and the second is as the basis for promulgation of legally enforceable water quality criteria by the State or Tribe, or via a superseding Federal rule when such action is necessary.

As with all science, new information leads to new insights concerning pollutant impacts on water quality. This ongoing evolution affects two important and inter-related responsibilities of the Agency, which are carried out concurrently. First, from time to time EPA revises the 304(a) water quality criteria to reflect the latest data and advances in criteria science. EPA compiles the current water quality criteria guidance from time to time in a series of guidance documents: the Green Book in 1968, the Blue Book in 1972, the Red Book in 1976, and the Gold Book in 1986. The second responsibility pertains to the requirements of section 303(c).

As part of the water quality standards triennial review process defined in section 303(c)(1), the States and Tribes are responsible for maintaining and revising water quality standards. Section 303(c)(1) requires States and Tribes to review, and modify if appropriate, their water quality standards at least once every three years. If EPA determines that a new or revised standard is not consistent with the requirements of the CWA, or EPA determines that a revised standard is necessary to meet the requirements of the Act, Section 303(c)(4) authorizes EPA to promulgate replacement water quality standards. From time to time EPA has chosen to undertake such promulgations. In doing so, EPA considers the most current available scientific information, such as toxicity data and exposure assumptions.

With a number of Federal promulgations of water quality criteria under section 303(c)(4) occurring over time, or the publication of a new or revised 304(a) criteria guidance document, the criteria value(s) in an earlier Federal action may differ from the value(s) in a subsequent Federal action. This has led to some confusion among the public with regard to what EPA's current section 304(a) water quality criteria may be for a given chemical at any given time, and, what values EPA would promulgate for a State or Tribe under section 303(c). Currently, EPA interprets the most recent Federal action, whether taken pursuant to 303(c) or 304(a), as establishing the current section 304(a) criteria guidance. When EPA determines that a Federal rule is necessary to correct deficiencies in State criteria, EPA looks to the most recent criteria science, as articulated in either section 304(a) criteria guidance or EPA's most recent statement contained in a proposed or final section 303(c) rule.

To date, the most recent Federal recalculation of section 304(a) criteria occurred in the proposed California Toxics Rule (CTR)(62 FR 42160), July 30, 1997. The proposed CTR was undertaken pursuant to CWA section 303(c)(2)(B). In the Water Quality Act of 1987, Congress increased the emphasis on numeric criteria for toxic pollutants by enacting section 303(c)(2)(B). This section requires all States and any Tribe with water quality standards authority to adopt ambient water quality criteria for toxics (priority pollutants) for which EPA has published criteria under section 304(a), and for which the discharge or presence could reasonably be expected to interfere with the designated use adopted by the State or Tribe. In adopting such criteria, States and Tribes must establish numerical values based on: (1) 304(a) criteria; (2) 304(a) criteria modified to reflect site-specific conditions; or, (3) other scientifically defensible methods.

Again, EPA views the criteria program as constantly evolving. Whenever new or revised criteria are published, whether under 304(a) or a rule under 303(c), that action establishes the Agency's most current section 304(a) criteria guidance.

Whenever a State or Tribe revises its water quality criteria EPA compares the State criteria values and the basis of their derivation to the criteria contained in the most recent Federal action (either 303(c)(4) rule making or 304(a) criteria guidance publication). Thus, there may be cases where the applicable policies and science have evolved such that EPA would be comparing State or Tribe adopted criteria values to Federal criteria values other than those in older rules or criteria guidance to determine whether to approve the State's or Tribes's criteria. This approach is necessary to encourage State and Tribal adoption of the most recent section 304(a) criteria.

2. Ambient Water Quality Criteria to Protect Aquatic Life

Aquatic life criteria are scientifically-derived values, derived by States, Tribes, or EPA, to protect aquatic life from the deleterious effects of pollutants in ambient water. States and Tribes may use EPA's section 304(a) criteria guidance in developing such criteria. When developing numeric aquatic life criteria, States and Tribes usually express two concentrations; one that protects against acute effects (effects from short term exposure) and one that protects against chronic effects (effects from long term exposure). The short-term concentration is expressed as a Criterion Maximum Concentration (CMC) and is the highest ambient concentration of a toxicant to which aquatic organisms may be exposed for a short time period without causing an unacceptable effect. The long-term concentration is expressed as a Criterion Continuous Concentration (CCC) and is the highest ambient concentration of a toxicant to which aquatic organisms can be continuously exposed without causing an unacceptable effect.

Water quality criteria to protect aquatic life consist of three components—magnitude, duration and frequency. Magnitude refers to the acceptable concentration of a pollutant. Duration is the period of time (averaging period) over which the ambient concentration is averaged for comparison with criteria concentrations. Frequency is how often the criteria can be exceeded to allow the aquatic community sufficient time to recover from excursions of aquatic life criteria and to thrive after recovery.

The numerical aquatic life criteria are expressed as short-term and long-term concentrations in order that the criteria more accurately reflect toxicological and practical realities. The combination of a Criterion Maximum Concentration (CMC), over a one-hour acute duration (a short-term average acute limit), and a Criterion Continuous Concentration (CCC), over a four-day chronic duration (a long-term average chronic limit) provide protection of aquatic life and its uses. Recommended averaging periods are kept relatively short because excursions higher than the average can

kill or cause substantial damage in short periods.

The frequency limitations specify that both the acute and chronic criteria may be exceeded once in a three-year period on the average. The recommended once in a three-year period coupled with the 4-day chronic averaging period used for the CCC approximately corresponds to the historically used criterion concentrations that occurs in a once-in-ten year seven-day-average low flow (7Q10). The once-in-three-year period coupled with the one-hour acute averaging period used for the CMC approximately corresponds to the historically used criterion concentration that occurs in a once-in-ten year one-day-average low flow (1Q10)

The method by which EPA derives criteria is updated from time to time, to incorporate advances in the science. To overcome the limitations in the previous approaches to duration and frequency, a new risk assessment methodology is being developed. EPA expects that the new risk assessment methodology will include an approach that will better handle variable concentrations by use of a kinetic-based toxicity model coupled with a population response model. A kinetic-based toxicity model considers the speed at which effects appear in different individuals and at different concentrations. The kinetic-based model allows prediction of the toxicity of any series of time-variable concentrations. It can predict how often effects would occur, and what fraction of individuals in the species would be affected.

To weigh the full impact that a particular time series of concentrations would have on the exposed population of a species, an additional factor is being considered: how long it takes to replace those individuals lost due to the toxic effects. Consideration of this involves the use of a population model indicating rates of recovery of different taxonomic groups to stresses. The intent of this part of the derivation is to allow the toxic impact to be portrayed as the overall average reduction in the number of individuals in a species, both during lethal or sublethal periods and during recovery periods, accounting for both partial lethality and partial recovery.

Request for public comment on Aquatic Life Criteria

EPA requests comments on the following question:

1. Prior to completion of all of the aquatic life methodology revisions, should EPA use the tools that have thus far been developed (the kinetic model of individual organism response to derive the appropriate duration/averaging period of the criterion or to evaluate mixing zone alternatives and the population effects model to derive the allowable frequency of excursion above the criterion) to re-examine and possibly revise its recommendations on the duration and frequency of criteria excursions?

3. Site-Specific Criteria

EPA also provides guidance on how States and Tribes may develop site-specific numeric aquatic life criteria that are either more or less stringent than the criteria adopted by the State or Tribe and that would normally apply to a water body. Currently, national guidance only has recommendations and methods for establishing site-specific water quality criteria for aquatic life but guidance is under development for deriving site-specific sediment quality criteria as well.

The regulation currently specifies that States and Tribes may adopt numeric criteria based on published CWA section 304(a) guidance, section 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods. 40 CFR 131.11(b). EPA recognizes that States and Tribes may want to develop numeric criteria that vary from CWA section 304(a) guidance for specific waters (e.g., where chemical and physical characteristics of local waters alter the bioavailability and/or toxicity of a pollutant; or when the species or community actually present or desired may be more or less sensitive than the species or community represented by the criteria database.) In such situations, a site-specific criterion may be appropriate. EPA has developed and continues to develop guidance to assist States and Tribes in the development of site-specific criteria. (See *Water Quality Standards Handbook, Second Edition*, EPA 823–B–94–005a, August, 1994, pp 3–38 through 3–45 and documents cited therein.)

Site-specific criteria are allowed by regulation and must be submitted to EPA for review and approval, as are any changes to a WQS. The regulation at 40 CFR 131.11(b)(1) specifically provides States and authorized Tribes with the opportunity to adopt water quality criteria that are "* * * modified to reflect site specific conditions." Under 40 CFR 131.5(a)(2), EPA reviews State and Tribal standards to determine "whether a State has adopted criteria to protect the designated uses" and whether such criteria are scientifically defensible (40 CFR 131.11(b)).

Existing guidance and practice are that EPA will approve site-specific criteria developed on the basis of sound scientific rationales.

Currently, EPA has specified three scientifically defensible procedures that States and Tribes may follow in deriving site-specific aquatic life criteria. These are the Recalculation Procedure, the Water-Effect Ratio Procedure and the Resident Species Procedure. These procedures can be found in the Water *Quality Standards Handbook* (USEPA, 1994). States may also develop other procedures for deriving such criteria as long as they are scientifically defensible. EPA also recognizes there may be naturally occurring concentrations of pollutants that may exceed the national criteria guidance published under Section 304(a) of the Clean Water Act.

The Great Lakes Guidance contains a procedure for developing site-specific criteria for protection of wildlife. While the Great Lakes States and Tribes must adopt a procedure consistent with that procedure, other States and Tribes may derive site-specific criteria using the procedure in the Great Lakes Guidance and such criteria can be more or less stringent than the applicable wildlife criteria where scientifically defensible. This is most likely to be in cases where a site-specific Bioaccumulation Factor (BAF) has been developed.

The Great Lakes Guidance also provides a procedure for modifying human health criteria on a site-specific basis based on differences in fish consumption or BAF. With regard to aquatic life criteria, if a State or Tribe could demonstrate that physical or hydrological conditions preclude aquatic life from remaining at a site for a period of time in which acute or chronic effects may occur, less stringent site-specific aquatic life criteria are allowed.

EPA's current thinking is that States and Tribes should identify in their water quality standards the methods they intend to use for site-specific criteria development and generally the circumstances under which such criteria may be developed. Additional discussion and request for comment on emerging rationales and methods for site-specific criteria, beyond that described and referenced above, is contained in section B.4.d of this notice, entitled "Alternatives to Removal of the Designated Use."

Request for Comments on Site-Specific Criteria

EPA seeks public comment on the following questions:

1. Should the regulation be modified to require States and Tribes to specifically authorize and identify the procedures for developing site-specific water quality criteria? Would additional EPA guidance be necessary?

2. Should the regulation or EPA guidance specify the circumstances under which site-specific criteria are necessary?

3. Does EPA need to develop guidance, policy, or clarify the regulation regarding site-specific criteria based on ambient conditions?

4. Should EPA explore broadening the concept of site-specific criteria to include watershed-specific or ecosystem-specific criteria perhaps in conjunction with a refined use designation? If so, what type of additional guidance or policy is necessary to fully explain these concepts and are any changes to the regulation needed to enable and/or facilitate use of watershed or ecosystem-specific criteria?

4. Narrative Water Quality Criteria

Narrative criteria can be an effective tool for controlling the discharge of pollutants when numeric criteria are not available. Narrative criteria, which have become known as ''free froms'', were first developed in 1968 and continue to be used in State and Tribal water quality standards. EPA guidance explains that these ''free froms'' apply to all waters of the United States at all flow conditions (including ephemeral and intermittent streams) (see *Water Quality Standards Handbook: Second Edition* (EPA–823-B–94–006, August 1994). Narrative 'free from' criteria guidance indicates that all waters be free from substances, for example, that (a) cause toxicity to aquatic life or human health, (b) settle to form objectionable deposits, (c) float as debris, oil, scum and other materials in concentrations that form nuisances, (d) produce objectionable color, odor, taste or turbidity, or (e) produce undesirable aquatic life or result in the dominance of nuisance species.

The toxic ''free froms'' include protection from both chronic and acute toxicity and include all pollutants which cause toxic effects, including but not limited to those listed under Section 307(a) if necessary to protect the designated use. All States have adopted narrative water quality criteria pursuant to section 303(c). See 48 FR 51400–51402, November 8, 1983. EPA guidance interprets these ''free froms,'' as with all criteria, to apply to the ambient water quality, not distinguishing between point sources and nonpoint sources of toxicity.

Currently, 40 CFR 131.11(a)(2) of the water quality standards regulation requires States and Tribes that have established narrative criteria for toxic pollutants to identify the methods by which the State or Tribe intends to regulate point source discharges of toxic pollutants based on such narrative criteria. EPA regulations at 40 CFR 122.44(d)(1)(v) and (vi) require narrative criteria to be implemented through NPDES permit limits. More specifically, when the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion, the permit must, under most circumstances, contain effluent limits for whole effluent toxicity. In addition, where the permitting authority determines that a specific pollutant for which the State or Tribe has not adopted a chemical criterion is in a discharge in an amount that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion, the permit must contain effluent limits for that pollutant that are based on an interpretation of the State's or Tribe's narrative criterion. The regulation provides three options for interpreting the narrative criterion, and in addition, EPA has provided guidance on this requirement in both the Technical Support Document for Water Quality-Based Toxics Control and the Water Quality Standards Handbook (both Cited above). The guidance advises States and Tribes to develop implementation procedures that explain the application and integration of all mechanisms used by the State or Tribe to ensure that narrative criteria are attained (e.g., chemical-specific requirements, whole effluent toxicity requirements, and biological criteria, where biological criteria programs have been developed by the State or Tribe). The rationale for this approach is that comprehensive written procedures facilitate implementation decisions, reduce inconsistencies that can result in different requirements for similar situations, and promote effective and sensible application of narrative toxics criteria.

Although all States and Tribes have some type of customary practice for implementing narrative criteria, and many States and Tribes have developed implementation policies on narrowly defined topics (e.g., to explain application of whole effluent toxicity testing requirements), very few, if any, States and Tribes have developed comprehensive written implementation procedures that address all of the narrative toxics criteria implementation issues. The result may be inconsistent application of narrative toxics requirements within those States and Tribes that have not developed such procedures. In addition, the lack of documented methods makes it difficult for EPA to evaluate whether aquatic life and or human health is being adequately protected.

Request for Comments on Narrative Criteria

EPA seeks public comment on the following questions:

1. Should the regulation require adoption of ''free froms'' and similar criteria as being the minimum floor allowable under the Clean Water Act.

2. Reflecting current practice, should the regulation specify that States and Tribes are required to adopt narrative criteria for all waters?

3. At this time, EPA has limited information about how States and Tribes are implementing narrative criteria with regard to nonpoint source activities. How can narrative criteria best be implemented in the nonpoint source context and what might EPA do, including modifying the regulation, to enhance or further the use of narrative criteria?

4. Does the existing requirement for States and Tribes to identify methods for implementing narrative toxics criteria need to be clarified, and if so, should EPA clarify the requirement with additional guidance, or with revisions to the regulation?

5. What minimum elements should be included in an implementation method for narrative toxics criteria? Should implementation methods describe application and integration of all of the various mechanisms used to regulate point sources, or should such methods focus on only certain aspects of toxics control (e.g., chemical-specific limits, whole effluent toxicity limits)?

6. The current regulation requires the State or Tribe to identify the method by which the State or Tribe intends to regulate point source discharges of toxic pollutants on water quality limited segments based on such narrative criteria.

Should this narrative criteria translation method apply only to point source discharges of toxic pollutants on water quality limited segments or to both point and non-point sources?

7. Should the regulation more explicitly require implementation procedures for narrative criteria other than toxics criteria? Should the regulation include minimum requirements for these implementation procedures?

5. State or Tribe Derived Criteria

States and Tribes may develop their own criteria although the water quality standards regulation 40 CFR 131.11 provides that where such criteria are less stringent than 304(a) criteria

guidance, the State or Tribe must demonstrate the criteria are scientifically defensible. Despite this available flexibility, and for a variety of reasons, most States and Tribes are reluctant to derive their own criteria. EPA is evaluating whether either changes to the water quality standards regulation or development of additional guidance would assist State or Tribal efforts to develop protective criteria. For example, for many pollutants where EPA criteria guidance has not been issued, information is available which would be useful in determining a protective water quality criterion. Sources of such information include relevant scientific literature, EPA's Integrated Risk Information System (IRIS), EPA's Aquatic Toxicity Database (AQUIRE), a database of high quality aquatic life toxicity data (under development), and other sources.

Request for Comment on State or Tribal Derived Criteria

EPA requests comment on the following question:

1. Would changes to the water quality standards regulation or development of additional guidance assist State or Tribal efforts to derive criteria? What changes or guidance would be most helpful?

6. Water Quality Criteria for Priority Pollutants

EPA has not revised the water quality standards regulation to incorporate CWA section 303(c)(2)(B) which was added to the CWA in 1987. EPA has, however, issued guidance on how States and Tribes may comply with section 303(c)(2)(B). The "Guidance for State Implementation of Water Quality Standards for CWA Section 303(c)(2)(B):December, 1988" provides three options for compliance:

Option 1 States and Tribes may adopt Statewide or Reservation-wide numeric chemical-specific criteria for all priority toxic pollutants where EPA has issued CWA section 304(a) criteria guidance.

Option 2 States and Tribes may adopt numeric chemical-specific criteria for those stream segments where the State or Tribe determines that the priority toxic pollutants for which EPA has issued CWA section 304(a) criteria guidance are present and can reasonably be expected to interfere with designated uses.

Option 3 States or Tribes may adopt a chemical-specific translator procedure that can be used to develop numeric criteria as needed.

The phrase "translator procedure" in this context means a method for translating a State's or Tribe's narrative toxics criterion into chemical-specific, numeric criteria sufficient to comply with CWA section 303(c)(2)(B). As discussed in EPA guidance ("Guidance for State Implementation of Water Quality Standards for CWA Section 303(c)(2)(B)," December 1988, Notice of Availability at 54 FR 346, January 5, 1989), such translator procedures generally identify the equations, protocols, and data sources that are used to translate narrative criteria into derived chemical-specific criteria. Such translator procedures are different from the narrative criteria implementation procedures required in 40 CFR 131.11(a)(2) of the water quality standards regulation in that such implementation procedures must be adopted into the State's or Tribe's regulations and generally describe all mechanisms that are used and integrated to attain narrative criteria, including chemical-specific, whole effluent toxicity, and biological methods (see the discussion of narrative criteria implementation procedures in sub-section (c)(6) above). EPA believes that revisions to the water quality standards regulation to incorporate the CWA section 303(c)(2)(B) requirements would enhance public understanding of EPA's implementation of the provision.

EPA's guidance on CWA section 303(c)(2)(B) established a presumption that any information indicating that such pollutants are discharged or present in surface waters (now or in the future) may be considered sufficient justification to require adoption or derivation of numeric criteria. The guidance made clear that the requirement to adopt (or derive) criteria applies not just to pollutants that are already affecting surface waters, but also to pollutants that have the potential to affect surface waters in the future. The rationale for this approach is that it is important to have numeric criteria applied to waters where current or future activities may result in sources of priority toxics that warrant regulatory controls or other pollution abatement or assessment activities. This interpretation of section 303(c)(2)(B) is now reflected in EPA guidance included in the *Technical Support Document (TSD) for Water Quality-Based Toxics Control* (TSD) and the *Water Quality Standards Handbook* (see page 30 in the TSD).

In implementing CWA section 303(c)(2)(B), many States and Tribes have adopted statewide or reservation-wide criteria for all priority toxics where EPA has issued CWA section 304(a) criteria guidance. Taking this approach eliminates the need to determine whether a "reasonable expectation" for use interference exists on a water body-by-water body basis, and thus greatly simplifies the process for establishing numeric criteria for priority toxics. In other States and Tribes, however, broad application of numeric criteria for priority toxics has not occurred, and the "reasonable expectation" question has been a significant implementation issue. EPA is considering whether its existing guidance on this issue is adequate to support equitable decisions nationally.

Another issue stemming from CWA section 303(c)(2)(B) implementation concerns the State or Tribe option to develop a "translator procedure" to achieve compliance. In EPA's CWA section 303(c)(2)(B) guidance, this approach was described as Option 3. The guidance intended to be used are the 1980 Human Health Guidelines and 1985 Aquatic Life Guidelines. All of which have been both peer reviewed and publicly reviewed and thus meet the requirements of "scientific defensibility" under 40 CFR 131.11.

Although EPA believes that adoption of such chemical-specific translator procedures potentially provide a State or Tribe with a useful means of establishing criteria, there are several issues associated with the use of such procedures. For example:

(1) It may be difficult for the public to stay abreast of the current applicable criteria where a State or Tribe does not routinely publish an updated list of State or Tribe criteria and provide wide distribution.

(2) Public participation may occur primarily on the details of the procedure itself, rather than the pollutant-specific criteria resulting from application of the procedure.

(3) Without requirements to submit to EPA for review and approval the individual criteria generated using the translator procedure, there could be a tendency to not include such criteria in the State's or Tribe's water quality standards at the time they are generated.

A third issue that arises from State and Tribal efforts to implement CWA section 303(c)(2)(B) concerns the provision for priority toxic pollutants that are not the subject of CWA section 304(a) criteria guidance. Where such numeric criteria guidance is not available, and where necessary to protect the designated uses, CWA section 303(c)(2)(B) provides that when a State or Tribe (1) reviews Water Quality Standards or (2) revises or adopts new standards pursuant to this paragraph, States and Tribes are to adopt criteria based on biological monitoring or assessment methods.

When adopting criteria based on biological monitoring or assessment methods, States and Tribes currently

have considerable latitude to devise an approach to satisfy the requirement. For example, States and Tribes may establish ambient criteria for the parameter toxicity. Alternatively, States and Tribes could adopt narrative biological criteria. Clearly, a variety of approaches, representing a range of resource commitments, may be used to satisfy this requirement. All of these approaches must meet the test of ''scientific defensibility'' and be consistent with the goals of the CWA.

Request for Comments on Water Quality Criteria for Priority Pollutants

EPA seeks public comment on the following questions:

1. With regard to compliance with section CWA section 303(c)(2)(B), would it be better to include only a general requirement, such as one which repeats the language in the statute itself, or should the regulation reflect EPA's interpretation of the options to achieve compliance with the provision?

2. Have problems or issues arisen in the implementation of CWA section 303(c)(2)(B) that may need to be addressed by changes in the regulation or revised EPA guidance?

3. What factors should be considered in determining whether a ''reasonable expectation'' for use interference exists? How has the ''reasonable expectation'' threshold decision been interpreted and addressed by the States or Tribes? Does EPA need to clarify when a ''reasonable expectation'' for use interference exists, and if so, should the Agency clarify the requirement by issuing additional guidance, by issuing regulatory requirements, or a combination of the two approaches?

4. Where a State or Tribe adopts a chemical-specific translator procedure for derivation of numeric criteria, what process should the State or Tribe follow to ensure that notice of State derived criteria is provided to the public?

5. Should EPA require States or Tribes using translator procedures to publish an updated list of criteria for all water bodies?

6. Should EPA revise the regulation to explicitly require that, where a translator procedure is used to derive criteria, public participation is required for each individual criterion, even where an opportunity for public participation was previously provided when the procedure itself was adopted?

7. Should submission of each criterion derived using translator mechanisms for review and approval or disapproval be a requirement, even where EPA previously reviewed and approved the procedure itself? If so, should implementation of derived criteria (e.g., in NPDES permit renewal and development) proceed even where EPA has not yet issued an approval/disapproval decision?

8. Does this statutory provision need to be further clarified and interpreted by the Agency? Should changes to the water quality standards regulation or Agency guidance be pursued?

7. Criteria for Non-Priority Pollutants with Toxic Effects

Over the years, an issue which has periodically arisen, particularly for non-priority pollutants, has been the proper approach to identifying the circumstances for which adoption of numeric criteria is required. Currently, the regulation does not elaborate on how this question should be addressed; it only provides the general mandate to adopt criteria ''sufficient to protect uses.''

EPA's current thinking is that the regulation should probably be modified to further specify the circumstances under which numeric criteria for non-priority pollutants must be adopted. One approach would be to model the requirements for non-priority pollutants after the requirements included in CWA section 303(c)(2)(B) for priority pollutants. That is, for non-priority pollutants where EPA has issued criteria guidance, the regulation could require adoption of numeric chemical-specific criteria where the discharge or presence of the pollutant can reasonably be expected to interfere with designated uses. EPA could define ''reasonable expectation'' broadly to support adoption of criteria before new pollution sources are proposed, or more narrowly for non-priority pollutants, limiting such a requirement for adoption of criteria to only those water bodies and pollutants where uses are already being interfered with, or where pollution sources now exist or are certain to occur in the near future. Establishing Such a requirement would encourage development of criteria for commonly-discharged and highly toxic pollutants like ammonia and chlorine that are currently not considered priority pollutants under section 307(a) of the CWA.

Strengthening the requirements for adoption of criteria for non-priority pollutants would address a concern of some that many of the CWA section 307(a) priority pollutants are no longer an appropriate focal point for State, Tribe and EPA toxic control efforts (e.g., some of the pesticides included on that list are no longer in widespread use).

Request for Comments on Criteria for Non-Priority Pollutants With Toxic Effects

EPA seeks public comment on the following questions:

1. For what specific pollutants and under what circumstances should adoption of criteria for non-priority pollutants be required by regulation?

2. Should EPA amend the water quality standards regulation or issue additional guidance to clarify when adoption of numeric chemical-specific criteria for non priority pollutants is necessary to ''protect designated uses''?

3. Should EPA require States or Tribes to adopt narrative criteria and a narrative criteria translation method for both 307(a) and other pollutants which elicit toxic effects on organisms?

8. Criteria Where Data or Guidance is Limited

A key issue facing States and Tribes seeking to develop aquatic life and human health criteria concerns the data requirements necessary to support derivation of a criterion. (In developing national CWA section 304(a) criteria guidance, EPA has established minimum data requirements.) When sufficient, acceptable data are not available, however, many States and Tribes have resorted to adoption of lowest observed effect levels (LOELs) as criteria in order to ensure that some level of protection is in place. LOELs are based on the lowest observed concentration of a chemical at which a statistically significant adverse effect was observed in an aquatic test organism. However, EPA would counsel against adoption of water quality criteria based on LOELs alone because they may not ensure protection of aquatic life uses since: (1) they represent effect concentrations, and (2) there may be significant limitations in the database upon which they are supported.

Thus, if this approach is used, States and Tribes are encouraged to use safety factors to approximate better a protective water quality level. The particular safety factor employed generally depends on the amount and quality of data concerning the LOEL. EPA has approved this approach in particular instances because criteria based on such LOELs provide more protection than no criteria at all.

A better approach to developing values with sparse data was developed and promulgated by EPA as part of the Water Quality Guidance for the Great Lakes System (Great Lakes Guidance). Under that Guidance's Tier II procedure, States and Tribes derive values to interpret the narrative criteria for

pollutants where the minimum data requirements for derivation of a criterion are not satisfied (see appendix C of 40 CFR Part 132.) These values are then used in place of the absent criteria as the basis for NPDES permit limits where needed. EPA's current thinking is that this approach for establishing values for interpreting the narrative for pollutants where data are limited is preferable to adoption of criteria based on a LOEL.

The Tier II methodology in the Great Lakes Guidance is designed to be used in the absence of the full set of data needed to meet criteria data requirements. For pollutants for which criteria have not been adopted into State or Tribal water quality standards, Great Lakes States must, under the guidance, use methodologies consistent with either the criteria (GLI Tier I) or Tier II methodologies, depending on the data available to implement their existing narrative water quality criteria that prohibit toxic pollutants in toxic amounts in all waters.

In adopting the Great Lakes Tier II methodology, EPA, working with the States, determined that there is a need to regulate pollutants more consistently in the Great Lakes System when faced with limited data on which to base criteria. Many of the Great Lakes States are already employing procedures similar to the approach in the final Guidance to implement narrative criteria. EPA determined the Tier II approach improves upon existing mechanisms by utilizing all available data. The Tier II aquatic life methodology is used to derive Tier II values which can be calculated with fewer toxicity data than under the Tier I water quality criteria methodology. Tier II values can, in certain instances, be based on toxicity data from a single taxonomic family, provided the data are acceptable. The Tier II methodology generally produces more stringent values than the Tier I criteria methodology, to reflect greater uncertainty in the absence of additional toxicity data. As more data become available, the derived Tier II values tend to become less conservative. That is, they more closely approximate Tier I numeric criteria.

States and Tribes may also develop their own criteria derivation procedure under option 3 of EPA's CWA section 303(c)(2)(B) guidance for priority toxic pollutants. This approach allows for timely derivation of criteria based on the latest available data, and may be used to derive criteria for pollutants for which EPA has not issued guidance. However, as for all criteria, such a procedure would need to result in criteria that are scientifically defensible, so again the issue of minimum data requirements is important.

Request for Comment on Criteria Where Data or Guidance is Limited

EPA requests comment on the following questions:

1. Should adoption of a lowest observed effect concentration be considered an acceptable option where no other criteria guidance is available, or should use of an uncertainty factor (e.g., 0.1, 0.5) be required to better approximate a protective water quality level? If an uncertainty factor is used, should that factor vary based on the amount and quality of data used to drive the LOEL? If so how?

2. Should EPA develop a method for derivation of alternative values for pollutants where the minimum data requirements included in EPA's criteria guidelines are not satisfied, such as the tier 2 procedure in EPA's Water Quality Guidance for the Great Lakes System?

3. How applicable should the Tier 2 process be to States and Tribes outside of the Great Lakes? Does the regulation need to be modified to include Tier 2 specifically for the entire country?

4. Does the information included in EPA's toxicity databases (e.g., IRIS, AQUIRE) need to be made more accessible to States, Tribes, or others seeking to develop their own criteria? If so, how can this be accomplished?

9. Toxicity Criteria

Toxicity criteria are an additional type of water quality criteria used to protect aquatic life. Toxicity criteria are expressed in terms of "toxic units" that cause toxic effects to aquatic organisms and are determined by exposing aquatic organisms to water samples (e.g., ambient water or effluent discharges). Whole effluent toxicity (WET) testing can be effective for controlling discharges containing multiple pollutants. It can also provide a method for addressing synergistic and antagonistic effects on aquatic life.

EPA is considering revising the water quality standards regulation to require States and Tribes with water quality standards authority to develop a numeric quantification of acceptable surface water levels for the parameter "toxicity." Doing so would implement the narrative criteria that waters be "free from" toxics in toxic amounts. Currently, States and Tribes use various approaches to implementing their narrative criteria, including using numeric toxicity values and implementing them through NPDES permits. However, there is no current requirement for States or Tribes to specify numeric criteria for toxicity in their water quality standards. Under current requirements and guidance, States and Tribes do not always specify implementation of toxicity criteria and test methods as a required means to implement the narrative water quality criteria.

Toxicity is commonly measured by exposing test organisms (e.g. Ceriodaphnia, Fathead minnow) to various concentrations of chemicals or chemical mixtures in water. EPA has promulgated methods for measuring aquatic toxicity in effluents and surface waters in 40 CFR Part 136. EPA provided a recommendation on the allowable magnitude of this parameter in the 1991 Technical Support Document for Water Quality-based Toxics Control (TSD) that would facilitate State or Tribal implementation of such a requirement. The recommendation reads: For protection against acute toxicity, "the criterion maximum concentration (CMC) should not exceed 0.3 acute toxic units to the most sensitive of at least 3 test species; for chronic protection, the criterion continuous concentration (CCC) should not exceed 1.0 chronic toxic units to the most sensitive of at least 3 test species." Such a quantification serves, in conjunction with numeric criteria for individual pollutants and biological criteria, to establish an integrated and fully protective basis for assessment and control of pollutants.

Request for Comment on Toxicity Criteria

EPA seeks public comment on the following question:

1. Should the regulation be modified to explicitly require States and Tribes to adopt numeric toxicity criteria, or alternatively to use toxicity values and test methods as a required means to interpret and implement the narrative criteria? Or, is the current practice acceptable, whereby some States or Tribes have numeric toxicity criteria, some utilize toxicity methods to interpret their narrative requirements of no toxics in toxic amounts, and others use toxicity mainly as a tool to assess effluent quality, but not as the basis for permit limits?

10. Sediment Quality Criteria

Sediment quality criteria (SQC) are being developed by EPA pursuant to sections 304(a)(1) and 118(c)(7)(C) of the CWA in recognition that many water bodies are not meeting water quality goals even though ambient water quality criteria are being met. (See "The Incidence and Severity of Sediment Contamination in Surface Waters of the

United States, Volume 1: National Sediment Inventory,'' Office of Science and Technology, September 1997, EPA–823–R–97–006.) The contaminants of interest are those that preferentially partition to sediments, become sequestered, and remain bioavailable to the aquatic community. SQC are intended to protect against chronic effects to benthic organisms resulting from sediment contamination. The development and implementation of SQC is intended primarily to enable development of pollutant-specific State standards and NPDES permit limits needed for implementation of a more effective source control program. In addition, SQC will be useful in other programs, such as developing clean-up levels for sediment remediation activities and in evaluating sediments dredged from the Nation's waterways.

Sediment quality criteria have been proposed for five non-ionic organic compounds: acenapthene, dieldrin, endrin, fluoranthene, and phenanthrene. See, Technical Basis for Deriving Sediment Quality Criteria for Nonionic Organic Contaminants for the Protection of Benthic Organisms by Using Equilibrium Partitioning (EPA–822–R–93–011); Acenapthene (EPA–822–R–93–013); Dieldrin (EPA–822–R–93–015); Endrin (EPA–822–R–93–016); Fluoranthene (EPA–822–R–93–012); Phenanthrene (EPA–822–R–93–014). In addition to non-ionic organic compounds, the Agency also is working to develop SQC for metals. After considering public comments, EPA intends to publish final SQC dieldrin and aldrin in final form. The proposed criteria for acenapthene, fluoranthene, and phenanthrene will not go final; instead, EPA plans to propose a total PAH sediment criterion. In addition to its work on SQC, the Agency also is working to develop standardized methods for performing chronic sediment bioassay tests.

The EPA Science Advisory Board subcommittee reviewing SQC for non-ionic organics concluded that: ''these criteria not be used as stand-alone, pass-fail values for all applications.'' (EPA–SAB–EPEC–93–002). EPA is developing a users manual to provide guidance on use of SQC in a regulatory context to ensure consistency with that recommendation. The guidance would recommend that SQC be used in conjunction with chronic sediment bioassay tests in determining compliance with State standards, such as in interpreting the narrative criterion of no toxics in toxic amounts. Such an approach is currently being developed in more detail, and the users guidance will be made available to the public for comment prior to being finalized.

Request for Comment on Sediment Quality Criteria

EPA seeks public comment on the following questions:

1. Should the current regulation be revised to specifically address sediment quality criteria, and if so, what should such revisions address?

2. What chemicals or classes of compounds should receive priority for development of SQC?

11. Biological Criteria

Biological Integrity, Assessments and Criteria '

The Clean Water Act directs EPA to work with States and Tribes to restore and maintain the biological integrity of the Nation's surface waters (CWA 101(a), 303, 518(e)). Biological integrity is defined as a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of a region (Karr and Dudley, EPA–440/5–90–004, 1981). Biological integrity does not necessarily represent an aquatic system untouched by human influence, but does represent one that is balanced, adaptive and reflects natural evolutionary processes. Designated uses and criteria to protect those uses in State and Tribal water quality standards programs provide the means to achieve biological integrity.

To more fully protect aquatic resources and provide more comprehensive assessments of aquatic life use attainment, it is EPA's policy that States and Tribes should designate aquatic life uses for their waters that appropriately address biological integrity and adopt biological criteria necessary to protect those uses (EPA–823–B–93–002, Office of Water Memorandum to EPA Regions, Policy on Bioassessment and Biological Criteria, 1991). Designated uses to support aquatic life can cover a broad range, or continuum, of biological conditions with some waters being closer to the ideal of biological integrity than others. The attainable levels of biological integrity for any water is a State and/or Tribal determination involving public participation.

For example, the State of Maine used the water quality classification law to establish the minimum standards for three levels of biological integrity. These levels correspond to the water quality classification system and are increasingly restrictive, proceeding from the minimum state standard, Class C, to Class A, the most protective standard. These refinements serve to explicitly specify the designated aquatic life uses that apply to each classification category. Class C requires that the structure and function of the biological community be maintained and provides for the support of all indigenous fish species. The intermediate standard of Class B requires that there be no detrimental changes to the aquatic community, that all indigenous species are supported and that habitat be unimpaired. The Class A standard requires that aquatic life be ''as naturally occurs'' and habitat be characterized as ''natural.'' Within Class A, there is even a subset, Class AA, that further specifies ''free-flowing'' habitat. Waters with the Class AA designation are protected from any additional discharge or alteration. Under this system, attainment of the aquatic life classification standards for a given water body is evaluated using numeric biological criteria that were statistically derived from a statewide database. The numeric biological criteria are slated to go to rule-making in 1998.

Biological assessments are used to evaluate the condition of a water body using direct measurements of the resident biota in surface waters. Biological assessments integrate the cumulative impacts of chemical, physical, and biological stressors on aquatic life. Biological criteria, derived from biological assessment information, can be used to define State and Tribal water quality goals for aquatic life by directly characterizing the desired biological condition for an aquatic life use designation. Biological criteria are narrative descriptions or numerical values that describe the reference condition of the aquatic biota inhabiting waters of a specific designated aquatic life use (EPA–440/5–90–004). Biological criteria are based on integrated measures, or indices, of the composition, diversity, and functional organization of a reference aquatic community. The reference condition describes the attainable biological conditions for water body segments with common characteristics within the same biogeographic region. In summary, biological criteria provide a direct measure of the desired condition of the aquatic biota. This capability serves a dual purpose—goal setting and environmental impact analysis. Biological assessments are then conducted to evaluate if a water body is attaining its designated aquatic life use.

Biological criteria can play an important role in water quality programs and when properly implemented, complement and support

other methods and criteria, such as chemical water quality criteria and whole effluent toxicity criteria. The latter are measures, or indicators, of environmental stress and exposure whereas the biological assessments and criteria measure the cumulative effects of stressors on the aquatic community, whether chemical, physical or biological stressors, singly or in combination. A water quality program that employs the full array of methods and criteria will develop the information needed for more accurate assessment of impairment and effective resource management.

The linkage of biological effects, stressor identification and exposure assessment is particularly important when there are multiple stressors impacting a water body, especially when a watershed management approach is taken, or where wet weather flows are a major source of impairment in the water body. A comprehensive water quality program with biological, chemical, toxicity, and physical components will enable States and Tribes to make better decisions and focus limited resources to maximize environmental gain. A critical issue facing EPA's National Water Program is the manner and extent to which biological assessments and criteria should be incorporated into water quality programs to transition to a more comprehensive water quality control program that will better identify impairments and track improvements. This includes integrating biological assessments and criteria into use designations and attainability analyses, watershed management strategies and source control requirements.

Biological criteria typically include measures of the types, abundance, and condition of aquatic plants and animals, providing information on the status and function of the aquatic community in response to the cumulative impact of both chemical and nonchemical stressors. For example, Ohio uses a multi metric approach to develop numeric biological criteria for two different assemblages: benthic macro invertebrates (bottom dwelling insects, etc.) and fish (Yoder, 1995). Biological indices have been derived that integrate measurable structural and functional characteristics of the in-stream fish and macro invertebrate communities which help assess the health of the community. Structural characteristics are based on measures of biological community structure such as diversity or taxa richness (e.g. total number of taxonomic groups) and the representation of specific taxonomic groups (e.g. number of mayfly or caddisfly taxonomic groups) within the community. Functional characteristics include measures of biological function such as feeding strategy (e.g. percent carnivores, omnivores), environmental tolerance (e.g. number of intolerant and tolerant species), and disease symptoms (e.g. percent diseased species and anomalies, including deformities, eroded fins, lesions and external tumors in fish).

The Ohio biological criteria were developed based on ecoregional reference conditions and provide a quantitative biological description of the State's designated aquatic life uses for warm water rivers and streams, including exceptional, general, modified and limited warm water habitat. The description and derivation of the indices and ecoregions are contained in the "Biological Criteria for the Protection of Aquatic Life: Volume II. Users Manual for Biological Field Assessment of Ohio Surface Waters" cited in Ohio's Water Quality Standards. Ohio uses biological criteria to support all aspects of its water quality management program (Yoder, 1995). Ohio's approach is another example of how a State can adopt biologically-based refined designated aquatic life uses and biological criteria consistent with EPA's policy.

Application of Biological Assessments and Criteria in State and Tribal Water Programs

Biological assessments and criteria can be an important component of State and Tribal watershed management programs by assisting in prioritization and targeting of actions, setting restoration goals and performance standards, and documenting results. For example, North Carolina has adopted narrative biological criteria into its water quality standards regulation that references standardized methods for data collection and analysis for fish and macro invertebrate communities. Specific biological indices, metrics, or numeric criteria are not included in the water quality standards regulation. However, by citing the standardized methods in the State's water quality standards, North Carolina established a mechanism for consistent, quantitative translation of the narrative biological criteria. Under the State's five year basin-wide management program, benthic macro invertebrate and fish community data are presented in individual basin-wide assessment reports. Macroinvertebrate and fish community surveys, special studies, and other water quality sampling activities are conducted in the second and third years of the cycle to provide information for assessing status and trends through the basin. Water quality management plans are being developed for all of the State's major river basins on five year cycles.

Biological assessments and criteria can fulfill several assessment functions within the NPDES permitting process. In conjunction with pollutant concentration and toxicity data, biological assessments can be used to detect previously undetected chemical water quality problems and to evaluate the effectiveness of control actions. Biological findings of use impairment can trigger the necessary technical investigations which can identify the source or sources of impairment and determine appropriate corrective measures through point or nonpoint source controls as appropriate. The State of Maine uses biological assessments and criteria to evaluate the effectiveness of controls and to inform the permit review process. Aquatic life criteria are specified in the water quality classification law and attainment is assessed using quantitative data and a multi variate statistical model. Findings of biological impairment trigger management intervention to identify possible causes. Permits have been modified and enforcement actions initiated to address biological impacts. Alternatively, favorable biological findings have been used in a tiered approach to re-direct limited agency and permittee resources to more urgent concerns.

In Maryland, investigators use bioassessments as an integral part of the Rapid Stream Assessment Technique (RSAT) to conduct watershed-wide stream quality reconnaissance, rapid screening of general storm water BMP performance and for elucidating general watershed land use—stream quality relationships (Galli, J., 1997). In Michigan, biological assessments have been used in the Wayne County Rouge River National Wet Weather Demonstration Project to identify impacts and to guide decision-makers and the public in evaluating options for preventing, reducing and minimizing pollution loading impacts on the river under a watershed approach to wet weather pollution management (Cave, 1997).

Biological assessments and criteria can be useful in evaluating highly variable or diffuse sources of pollution such as storm water runoff. These types of point source pollution do not lend themselves well to traditional chemical water quality monitoring and a biological assessment of their cumulative impact may effectively evaluate these discharges and the success of control actions.

Bioassessments have been successfully used in Florida to assess the cumulative impacts of multiple pollution sources within a watershed, in particular, storm water runoff and other nonpoint source discharges (McCarron, Livingston and Frydenborg, 1997). The Florida Storm water/Nonpoint Source Bioassessment Projects have found that bioassessments, over time, help reflect impacts from the fluctuating environmental conditions and highly variable pollutant inputs of wet weather discharges. Bioassessments also help to evaluate the habitat degradation typically associated with Storm water discharges. Bioassessments were also identified by key storm water experts from across the Nation as an important environmental indicator tool for assessing the impacts of storm water runoff and the effectiveness of storm water management strategies (Claytor and Brown, 1996).

When attempting to identify the specific sources of use impairment (stressors), the role that biological assessments and criteria will play needs to be carefully defined. Stressor identifications based solely on biological information may be straightforward in certain water bodies where a single source is the cause of impairment. In these cases, paired bioassessments, conducted above and below the discharge point, or in the vicinity of the source, may readily identify the degree of impairment and the efficacy of chosen control strategies. In small urban watersheds, dominated by storm water runoff, bioassessments and criteria may provide a direct means to measure and control the storm water impacts.

However, in complex water bodies, where numerous sources contribute to the observed biological impairment, it may be difficult for bioassessments to distinguish the relative degrees of impairment from each contributing source. Given these situations, EPA anticipates that a stressor identification evaluation (SIE) procedure will need to be developed to provide the technical tools and information that watershed managers can use to identify and evaluate the different sources of impairment that the bioassessments reveal and the specific stressors associated with each source (e.g. flow, turbidity, temperature, metals, etc.).

Guidance on Development of Biological Criteria

EPA has developed and will continue to develop technical guidance on conducting bioassessments and developing biological criteria for the following specific water body types: streams and wadable rivers, lakes and reservoirs, estuaries and near coastal waters, wetlands and large rivers. Technical guidance for streams and small rivers biological assessments and criteria was published in 1996 (EPA 822–B–96–001). Publication of technical guidance on lakes and reservoirs is expected in 1998 followed by guidance on estuaries and near coastal waters by 1999. Technical guidance development for wetlands was initiated in 1997 and for large rivers in 1998. Completion of these documents is planned within 5 years.

Guidance on Implementation of Biological Criteria

EPA is currently considering how to best advance State and Tribal adoption and implementation of biological criteria. A draft discussion document on implementation of biological criteria by States and Tribes sets forth an iterative, step-wise approach to development of biological criteria and adoption in State and Tribal water quality standards. (draft guidance document on biological criteria implementation, EPA, March 1998) Elements of a stepwise approach could include:

(1) establishment of a long term goal to restore and maintain biological integrity of State or Tribal surface waters where determined feasible;

(2) implementation plan for development of biological criteria for specific water body types, including time frame;

(3) development of standardized biological assessment methods, regional reference conditions, and biological database to support refinement of designated aquatic life uses and development of biological criteria;

(4) adoption of narrative biological criteria into water quality standards;

(5) adoption of quantitatively-based biological criteria in water quality standards.

In developing a flexible, stepwise approach, EPA is evaluating options for adoption of biological criteria that would result in the consistent translation of narrative biological criteria into numeric criteria (e.g. quantitatively-based biological criteria). A quantitatively-based biological criteria could be defined as:

(1) A narrative statement adopted into State or Tribal water quality standards that describes specific designated aquatic life uses and cites technical procedures existing outside of regulation. The technical procedures result in the translation of the narrative statement into quantitative measures; including description of how biological assessment data is collected and analyzed, and how the biological criteria are developed.

—and/or—

(2) A narrative statement as above plus the adoption of the technical procedures or the actual numeric biological criteria in State or Tribal water quality standards.

These two options for adopting quantitatively-based biological criteria are based on existing State models such as Maine, North Carolina and Ohio (EPA 230–R–96–007). North Carolina has adopted a narrative biological criteria for its aquatic life use classification and cites in the water quality standard regulation the standardized methods for data collection and analysis. Maine and Ohio have developed more refined classifications of their aquatic life uses and developed biological criteria for each specific use. Both States cite technical manuals specifying standardized methods. Ohio has adopted its numeric biological criteria directly into its standards regulation. As mentioned earlier, the Maine Department of Environmental Protection is currently embarking on a rule making process to adopt its existing standardized field methods, statistical analysis protocols and numeric classification criterion (numeric biological criteria) into its water quality regulation. Similar to Ohio, these rules will codify the technical procedures for determining attainment of aquatic life use classification. EPA describes these various States' work for consideration as possible models of biological criteria that would result in the consistent translation of narrative biological criteria into numeric criteria (e.g. quantitatively-based biological criteria).

A Regulatory Requirement for Biological Criteria

EPA is considering whether it should explicitly require States and Tribes to adopt biological criteria in either the narrative or numeric form, and, if not, whether an alternative approach to encouraging the use of biological criteria is appropriate. Some States and Tribes have already allocated resources to biological criteria development because a regulatory requirement is anticipated at some time in the future. Others have been unwilling to commit resources to development of biological criteria before specifically required to do so. Concerns have also been raised about yet another regulatory requirement to be imposed over existing requirements that are still not fully implemented—adding new layers of requirements in a piecemeal fashion without adequate resources. EPA is sensitive to the concern that

generating the data and developing the analytical capacity to incorporate biological criteria into water quality standards may present a significant resource challenge to some States and Tribes.

Advocates for a requirement for States and authorized Tribes to adopt biological criteria argue that States and Tribes will not implement biological criteria in a timely manner, if at all, without an explicit Federal regulatory requirement. The viewpoint has been expressed that States and authorized Tribes will not adequately increase program emphasis or resources if biological criteria are not required and, as a consequence, biological criteria will be relegated to a lesser role then chemical water quality criteria or whole effluent toxicity. Some States have either direct (i.e. executive orders, legislative mandates) or indirect limitations on adopting new regulations and policies that are more stringent than that required by Federal legislation. Adopting biological criteria may be seen in some States and Tribes as exceeding minimum Federal requirements. Concern has been expressed that without biological criteria as a fundamental component of a State or Tribal water quality standards program, transition of water quality standards programs to a more integrated ecosystem approach with an emphasis on watersheds will not succeed.

Adoption of Narrative Biological Criteria

As an alternative to requiring adoption of numeric biological criteria, EPA could require States and Tribes to adopt a narrative biological criteria. The narrative biological criteria could be a statement of intent adopted in a State's or Tribe's water quality standards to formally consider the fate and status of aquatic biological communities and to establish the framework for the consistent and quantitative translation of a State's or Tribe's designated aquatic life uses and development of numeric biological criteria. EPA has published a document on procedures for initiating narrative biological criteria (EPA–822–B–92–002). An example of a narrative biological criteria based upon that publication follows:

The State will preserve, protect, and restore the water resources in their most natural condition deemed attainable. The condition of these water bodies shall be determined from the measures of physical, chemical, and biological characteristics of each surface water body type, according to its designated use. As a component of these measurements, the biological quality of any given water system shall be assessed by comparison to a reference condition(s) based upon similar regional hydrologic and watershed characteristics (reference standardized methods and operating protocols).

Where attainable, such reference conditions or reaches of water courses shall be those observed to support the variety and abundance of aquatic life in the region as is expected to be or has been historically found in natural settings essentially undisturbed or minimally disturbed by human impacts, development or discharges. This condition shall be determined by consistent sampling and reliable measures of selected indicated communities of flora and/or fauna as established by [cite appropriate State agency or agencies] and may be used in conjunction with acceptable chemical, physical, and microbial water quality measurements and records judged to be appropriate to this purpose.

Regulations and other management efforts relative to these criteria shall be consistent with the objective of preserving, protecting and restoring the most natural communities of fish, shellfish, and wildlife attainable in these waters; and shall protect against degradation of the highest existing or subsequently attained uses or biological conditions pursuant to State antidegradation requirement.

EPA is considering what could constitute approvable narrative biological criteria and the feasibility of EPA promulgating narrative biological criteria where a State or Tribe fails to adopt such criteria.

Time Frame for Adoption of Biological Criteria in State and Tribal Water Quality Standards

In 1991 EPA issued a policy that established as a long-term Agency goal the development and adoption of biological criteria in State and Tribal water quality programs (Transmittal of Final Policy on Biological Assessments and Criteria, memorandum from Tudor Davies, Director of the EPA Office of Science and Technology, to Regional Water Management Division Directors, June, 1991). EPA has identified as a program priority during the FY1997–1999 Water Quality Standards Triennium that States and Tribes initiate and continue to expand development of scientifically defensible biological-based classification systems (FY 1997–1999 Water Quality Standards Priorities, memorandum from Tudor Davies, Director of the EPA Office of Science and Technology, July 22, 1996). Based on State experiences, development of biological criteria can range between five to ten years, depending on several factors such as available resources, existing State expertise, existing data bases and geographic variability. If EPA were to require or recommend that States and Tribes adopt biological criteria, EPA would need to determine appropriate time frames for adoption and implementation of these criteria. EPA is considering whether the following are reasonable and appropriate time frames for adoption of biological criteria in State and Tribal water quality programs:

1. narrative biological criteria for streams and an implementation plan for development of quantitatively-based biological criteria for streams in the 2000–2003 Water Quality Standards Triennium.

2. narrative biological criteria and an implementation plan for development of quantitatively-based biological criteria for other applicable water body types (e.g. lakes and reservoirs, estuaries and near coastal waters, large rivers and wetlands) within ten years following EPA publication of technical guidance.

Linkage of Biological Criteria to Stressor-Identification

One of the potential benefits of developing a biological criteria program is the increased ability to assess water quality impairment due to nonpoint source pollution, broadening the scope of most water quality-based programs beyond regulation of effluent discharges. However, many currently regulated point source dischargers are skeptical that greater focus on nonpoint source would actually occur, particularly considering the time and resource constraints on most State and Tribal programs. Industry and municipalities are concerned that biological criteria bring an additional layer of regulatory and associated costs and that they may be an easy target for additional requirements whether their discharge is the source of impairment or not. EPA recognizes that the role biological assessments and criteria will play to help identify specific stressors or sources of use impairment will need to be carefully defined and is interested in practical, effective approaches to evaluate potential stressors and sources of impairment when a water body fails biological criteria.

Request for Comment on Biological Criteria, Assessment and Implementation

EPA is soliciting comment on the following questions:

1. Should EPA amend the regulation to explicitly require States and Tribes to adopt biological criteria or are there alternative approaches that EPA should consider? Should EPA seek to ensure that biological criteria will be developed and implemented in all State and Tribal water quality programs?

2. If EPA were to explicitly require States and Tribes to adopt biological

criteria, should it require a narrative only, or a combination of both narrative and numeric criteria as described in the draft implementation guidance (e.g quantitatively-based biological criteria)? What should EPA promulgate if a State or Tribe fails to adopt biological criteria in its water quality standards?

3. If EPA were to explicitly require biological criteria, what is a reasonable time frame for State or Tribal adoption?

4. What are practical, effective approaches to identify and evaluate potential stressors and sources of impairment when a water body fails biological criteria?

5. In what ways can biological criteria and biological assessments be used to effectively manage known stressors or sources of impairment, including urban and rural runoff?

12. Wildlife Criteria

Wildlife criteria are designed to protect mammals and birds from adverse impacts from pollutants due to consumption of food or water from a water body. A wildlife criteria methodology applicable to the Great Lakes Basin and a few wildlife criteria were published as part of the Great Lakes Guidance. EPA does not have an active wildlife criteria guidance program at this time but it is a potential emerging criteria program. The wildlife criteria that EPA promulgated in the Great Lakes Guidance are for the following four chemicals: DDT (and metabolites), mercury, PCBs, and dioxin (2,3,7,8–TCDD).

Request for Comment on Wildlife Criteria

EPA requests comment on the following question:

1. Does the regulation need to be clarified to specifically address the development of wildlife criteria guidance for the protection of aquatic dependent wildlife?

13. Physical Criteria

Physical criteria is a concept that takes into account the physical attributes of the aquatic environment, such as quality of habitat and hydrologic balance. Commenters on the draft ANPRM identified physical habitat and hydrologic balance criteria as additional important forms of criteria that should be discussed in the ANPRM. EPA agrees that physical habitat parameters, including flow, are important and often overlooked parameters that influence and at some sites control whether or not an aquatic life use is or will be attained. For example, research referenced by Schueler (see Schueler, T. The Importance of Imperviousness. Watershed Protection Techniques, Fall 1994) suggests that in many small urban streams substantial loadings from municipal separate storm sewer systems are severely degrading the aquatic habitat. The authors suggest that the primary cause of this habitat impairment is the high volume and velocity of the storm water flows into this type of stream. The high flows exceed the peaks in the natural flow regime of these streams and as a result stream bank erosion, turbidity and siltation occur and the local habitat is degraded. Further habitat destruction in larger downstream receiving waters often results from the physical deterioration of the upstream urban systems. For example, some recent studies have shown that in some lakes the biggest source of silt and sediment deposition into the lake is actually from the eroded material that comes directly out of the stream bed and stream banks that are scoured out during elevated wet weather peak discharges and extended hydrographs. This can lead to eutrophication, increased turbidity, decreased light penetration, submerged aquatic vegetation (SAV) loss, spawning bed smothering, and shellfish habitat damage.

Studies of this phenomenon suggest that until these man-made flow regimes are better managed and the resulting stresses to physical habitat corrected, no amount of control of pollutants is likely to restore the aquatic ecosystem to a level more closely resembling a natural state.

The character of natural waters is obviously affected by wet weather events. Flowing waters, especially, can change dramatically with the seasons and in response to specific precipitation events. Seasonal and event driven changes in flows, sediment loads, temperature, etc. are common and natural processes which are integral to the maintenance of natural waters and their aquatic communities. Human-caused changes to the landscape, however, have altered these natural processes, and for many waters, the altered flows and the contamination now associated with wet weather discharges (discharges that occur in whole or in part as the result of wet weather events) present significant environmental problems. Although these problems are generally well recognized, they have been difficult to address effectively precisely because of their magnitude and variable nature.

The CWA's objectives include the protection and restoration of the physical integrity of our nation's waters. Scientific experts agree that overall physical habitat loss is the single biggest factor in the loss of aquatic species. Physical habitat damage and loss to the nation's waters includes: (1) Wetlands losses; (2) the denuding of stream banks through unwise forestry, farming, mining, and urbanization; (3) the embedding of stream bottoms with fine-grained silt from poorly designed and managed farm and construction sites; (4) the damming of river systems; (5) the channelization and/or concrete lining of rivers and streams; (6) the obliteration of ephemeral and first-order streams and springs during urbanization and; (7) the widening and deepening of stream channels due to high-velocity urban storm flows.

All seven of these phenomena are common forms of aquatic habitat damage and loss, and yet there is little national guidance to address the physical parameters that contribute to these impacts. In addition, EPA does not have a clear picture of how often physical habitat parameters, including flow are used by States and Tribes to assess, manage, and/or regulate activities that damage habitat. Some commenters on the draft asserted that water quality criteria guidance is needed to address these forms of habitat loss, to create threshold values to protect designated uses and to provide measuring tools for monitoring watershed and water body health. EPA agrees that further investigation of the role of physical habitat parameters, including hydrologic balance, in water quality standards programs is necessary. EPA is considering the relative importance of such criteria guidance as compared to other forms of criteria guidance such as ambient water quality criteria, sediment criteria and biological criteria; and on the likelihood that States and Tribes would develop and implement such criteria if technical guidance and supporting policy were available. EPA is also interested in identifying examples of where such criteria guidance has already been used as the basis for assessing, managing and protecting water quality.

With respect to hydrologic balance, EPA discusses the issue in the antidegradation section of this ANPRM. Some commenters on the draft ANPRM suggested that maintaining hydrologic balance in surface waters, though important in the context of antidegradation, is also important for other aspects of water quality standards. These commenters suggested that hydrologic balance should be part of basic water quality criteria guidance for watershed and water body assessment and for long-term urban storm water abatement and prevention plans under

the storm water NPDES program, as well as for the traditional NPDES program.

EPA is further interested in issues associated with hydrologic imbalances created by various industries and land operations, and the options for researching and creating a set of hydrologic balance criteria guidance. These could include, for instance, regional minimum stream flow criteria on a seasonal or average monthly basis, a groundwater-recharge criterion meant to maintain adequate stream base flow, and a peak-flood and bank full discharge prevention criterion, perhaps based on hydrologic regions of the country.

Request for Comment on Physical Criteria

EPA seeks comment on the following questions:

1. Would it be useful to explicitly identify physical criteria such as habitat and hydrologic balance in 40 CFR 131 as a valid form of criteria that States and Tribes can adopt in their water quality standards?
2. Would EPA technical guidance on physical criteria be useful to States and Tribes? Is it necessary?
3. What are some examples of physical criteria that are being used today and what are they being used for?
4. What should be the principal uses for physical criteria? Would these help address pulsed or intermittent impacts, such as those from urban and rural runoff?

14. Human Health

Human health water quality criteria are scientifically derived values developed by States, Tribes, or EPA to protect human health from the deleterious effects of carcinogens and noncarcinogenic toxicants. Human health criteria take into account the health effects from the consumption of aquatic organisms and drinking water. Human health criteria are based on the potential of carcinogens and noncarcinogenic toxicants to cause adverse impacts to human health. When adopting criteria to protect human health, a State or Tribe may use EPA's Section 304(a) criteria documents or other information on factors to derive human health criteria. However, if a State or Tribe decides to adopt criteria less stringent than recommended by EPA, the State or Tribe must provide documentation which supports that the approach is based on sound scientific rationale.

Changes to the Human Health Criteria Methodology are anticipated for proposal in the **Federal Register** in 1998. These changes to the 1980 ambient water quality criteria (AWQC) derivation guidelines (45 FR 79347) are intended to reflect the many significant scientific advances that have occurred during the past 17 years in such key areas as cancer and noncancer risk assessments, exposure assessments and bioaccumulation. Comments on any of the key area issues, as well as implementation issues, are welcome and should be made during the public comment period following the anticipated 1998 proposal.

The following discussion focuses on three key policy-related issues, including: choice of risk levels; fish consumption assumptions and environmental justice, and the use of maximum contaminant levels.

a. Risk Levels. Criteria for specific pollutants for the protection of human health rely in part on risk levels (incidence of cancer). Numeric criteria for carcinogens are based on three inter-related assumptions: exposure, cancer potency, and risk level. Exposure considerations are based on a wide range of factors, including an estimate of the rate of fish and drinking water consumption, an estimate of the body weight of an exposed individual, and an estimate of the rate of a chemical's relative tendency to bioaccumulate in fish tissue as compared to the surrounding water. Cancer potency factors (q1*) provide a measure of a chemical's potential to cause cancer, and are typically derived from studies on laboratory animals. The risk level represents an incremental increase in cancer incidences resulting from exposure to the chemical.

EPA guidance sets forth a range of criteria values that result in calculated risk levels of 10^{-5}, 10^{-6}, and 10^{-7} for informational purposes. Most States and Tribes select either a 10^{-5} or 10^{-6} risk level as an appropriate value, i.e., one additional cancer incidence per one hundred thousand or one million exposed individuals, respectively. This level seems to represent some general scientific and public consensus that the cancer risks are acceptably small or insignificant. States and Tribes, however, are not limited to selecting among the risk levels published in the CWA section 304(a) guidance documents.

If exposure assumptions are changed, while the assumed risk level remains the same, the criterion will change accordingly. The risk to people who intake more than the default exposure assumptions increases with the degree of change in the intake rates. For example, if the State or Tribe chooses to protect at a risk level of 10^{-5} and assumes a fish consumption rate of 6.5 gm/day, but some individuals within the State or Tribe actually eat 65 gm/day of fish, the criterion actually protects those individuals at a risk level of 1×10^{-4} (one additional cancer case per 10,000 people). The risk level can change based on the relative change in each parameter. When adopting these standards, States and Tribes are strongly encouraged to provide documentation that the assumptions made in establishing the criteria are reasonable and adequately protect the population, including highly exposed subpopulations at the risk level asserted in the States' and Tribes' standards. EPA strongly encourages States and Tribes to highlight these provisions of their standards during the public participation process.

EPA's current criteria documents indicate the risk level within a range of 10^{-5} to 10^{-7} for the general population. The policy has been to allow States and Tribes to select appropriate risk levels and is consistent with the framework of the CWA that recognizes and supports State and Tribal primacy in making risk management decisions to protect its population provided that the goals of the Act are met. EPA's approval of different cancer risk levels to protect human health in different States or Tribes is subject to debate. Many have questioned States' and Tribes' selection and EPA's approval of various risk levels to protect human health. Some assert that EPA should require all States and Tribes to adopt a single risk level. Others believe EPA should require States and Tribes to develop data on the different exposure assumptions that may be present within the State or Tribe.

With regard to subpopulations that may consume higher amounts of fish than is assumed for the general population, EPA's Great Lakes Guidance stated that a risk level of 10^{-4} for such subpopulations in the Great Lakes basin can be protective.

In a draft proposal of the water quality criteria methodology revisions, EPA is considering proposing that risk levels in the range of 10^{-4} to 10^{-6} be adopted in deriving criteria. However, the proposed revisions also note that care must be taken in situations where the AWQC includes fish intake levels based on the general population to ensure that the risk to more highly exposed subgroups (subsistence, minority) does not exceed the 10^{-4} risk level. Furthermore, EPA is considering proposing the 10^{-6} risk level as the level that ensures protection for all exposed population groups. As stated before, all comments regarding methodology, including risk levels,

should be made during the public comment period following the anticipated 1998 Human Health Criteria Methodology proposal.

EPA intends to foster consistent approaches between Agency program offices, including its approach to determining allowable risk levels. The Food Quality Protection Act of 1996 (FQPA) amended the Federal Food, Drug and Cosmetic Act (FFDCA) to prohibit EPA from issuing tolerances for pesticide residues in or on food unless the Agency determined that there is a "reasonable certainty" that the residues will result in "no harm." Tolerances are allowable levels of chemicals in food; food containing residues in excess of a tolerance may not be sold in commerce. The legislative history of FQPA indicated Congressional support for EPA's view that reasonable certainty of no harm would generally be met when a non-threshold risk is below a 10^{-6} level. For threshold risks, the legislative history contained general support for a margin of safety of 100, except that the Statute required the Agency to add an additional 10-fold margin of safety to protect infants and children, unless the Agency concluded on the basis of reliable data that a different margin would be safe for infants and children. In determining whether dietary exposures are safe, the FQPA also directs EPA to consider non-occupational exposures to chemicals used as pesticides, and to aggregate risks from chemicals that share a common mechanism of toxicity. EPA's Office of Pesticide Programs is in the process of developing new policies in response to the FQPA. EPA's Office of Water will consider these policies when they are completed.

b. Fish Consumption Assumptions. EPA's recommended human health criteria under CWA section 304(a) guidance are currently derived with a fish consumption rate of 6.5 grams per day (roughly one quarter ounce of fish and shellfish). This value represents an average based on market survey data gathered in 1973–74, and reflects a national average for all consumers and nonconsumers of fish and shellfish from estuarine and fresh waters. Again, EPA intends to propose revisions to the human health methodology for deriving ambient water quality criteria, including revisions of the fish consumption rate. Some assumptions regarding fish consumption and criteria policy are also discussed in FR Vol. 61, No. 239, 65183 (December 11, 1996).

EPA recognizes that, while important, the national fish consumption estimate is one of many different parameters used to set ambient water quality criteria to protect human health and that the interactions of these parameters adds substantial complexity to the methodology. However, because this component is easily understood, it receives the most attention from the general public. Overall, EPA considers its human health criteria methodologies to be conservative and protective of human health.

EPA also recognizes that there are subpopulations that consume greater quantities of fish and has considered this as part of the human health methodology for developing water quality criteria. State and Tribal human health criteria are often based on a risk level of 10^{-5} or 10^{-6} to protect people inclined to consume higher quantities than the average. In addition, with regulatory actions for carcinogens, individuals consuming even 20 times the 6.5 gram amount would still be protected at the 10^{-4} risk level. (EPA is *not* proposing a national risk level of 10^{-4} here, rather EPA is acknowledging that the level of risk is relative to the consumption of fish (i.e., it is greater for individuals consuming more fish than the national average).

A similar rationale for the protectiveness of a criterion may not apply to non-carcinogenic pollutants (i.e., RfD-based chemicals), where significantly higher fish consumption rates may (when combined with other exposure sources) result in exposures significantly exceeding the RfD. Although there are safety factors associated with an RfD, they are related to uncertainties associated with the toxicological evaluation, not with the sources and levels of exposure. Therefore, significantly higher intakes may require more stringent criteria to protect human health.

EPA is seeking ways to implement Executive Order 12898 (February 16, 1994, 59 FR 7629) regarding environmental justice to ensure that water quality criteria are developed taking into account populations such as Native Americans and other minorities, as well as other subsistence fishers. This would include working with the scientific community and the public to improve EPA's health assessments and risk assessments and incorporate relevant issues into its policies and guidance. This also includes mechanisms for public participation (e.g., meetings) for the purposes of fact-finding, receiving comments, and conducting inquiries concerning environmental justice.

Relevant to water quality standards, EPA recognizes the need to address issues regarding different fish consumption patterns among subsistence, minority populations. EPA acknowledges that these groups may consume a greater quantity of fish than the national average. In addition, these groups have asserted that States and Tribes should be required to take a more aggressive role in protecting them.

Guidance for Assessing Chemical Contaminated Data for Use in Fish Advisories (Vol. 1–IV, USEPA, 1993 and 1994) notes that fish and shellfish consumption rates vary greatly for sections of the U.S. population (e.g., by gender, race, age, cultural and recreational activity, and income levels). Given the wide variations in consumption patterns, it would not seem to be possible for States and Tribes to provide the same level of protection from contaminated fish for all consumers. EPA believes criteria should ensure adequate protection of all significant populations and subpopulations from reasonable risks.

States and Tribes are encouraged to consider local surveys when selecting fish consumption rates to protect their populations since the national average value may not be indicative of local consumption habits. In its Water Quality Guidance for the Great Lakes System (60 FR 15366, March 23, 1995), EPA included a Great Lakes-specific fish consumption rate of 15 grams per day. This rate was based on several fish consumption surveys from the Great Lakes (see 60 FR 15366 at 15374, March 23, 1995.) EPA has also published for external peer review "Draft Guidance for Conducting Fish and Wildlife Consumption Surveys." (U.S. EPA 1997).

States and Tribes could be encouraged to modify criteria on a site-specific basis to provide additional protection appropriate for highly exposed subpopulations. That is, where high-end consumers would not be adequately protected by criteria derived using the default fish intake assumption, the State or Tribe may modify this assumption to provide appropriate additional protection. Again, such a recommendation was made in the Great Lakes Guidance. This preference will also be stated in the proposed revisions to the human health methodology for deriving ambient water quality criteria.

c. Maximum Contaminant Levels. Under the Safe Drinking Water Act (SDWA), EPA develops chemical-specific numeric values for use in protecting public drinking water supplies. They are maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs). A MCLG is a non-enforceable concentration of a drinking water contaminant that is protective of

adverse human health effects and allows an adequate margin of safety. A MCL is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCLGs are based solely on human health considerations (i.e., an identified adverse effect to human health, combined with an exposure intake estimate). In contrast, MCLs are to be as close to the MCLG as feasible, taking into consideration the availability and the cost of treatment technologies as well as the availability of analytical methodologies. When these two additional factors beyond health (treatment cost and analytical factors) are considered, the MCL for some chemicals is a higher (i.e., less stringent) value than the MCLG. However, there are also many chemicals for which the MCL is equal to the MCLG. This is particularly true for noncarcinogens. Over 80% of all current MCLs for noncarcinogens are identical to the corresponding MCLG for that substance. For carcinogens, MCLs are always higher than MCLGs because MCLGs for carcinogens are routinely set to zero.

Some States and Tribes utilize MCLs and MCLGs, as criteria to protect human health under the CWA. For some chemicals, the MCL or MCLG is more stringent than CWA section 304(a) human health criteria. In other cases, CWA criteria are more stringent than the MCL or MCLG. These differences come about for three basic reasons. First, as noted above, the 304(a) criteria under the CWA and MCLGs under the SDWA are strictly health-based values that do not account for treatment costs or analytical limitations. The MCL, however, does take into account treatment costs and analytical limitations. Second, the methodologies used to calculate the 304(a) criterion and the MCLG—both health-based values—for the same chemical often differ. Third, the MCLG and the 304(a) criterion sometimes have been calculated at different times, often years apart, using the current risk and exposure information at the time. Where different information on risk and exposure was used, differences in the numerical values can be expected.

It is important to consider some of the methodological differences between the derivation of 304(a) criteria and MCLs and MCLGs. Although the methods under SDWA and CWA both use the same reference dose (RfD) or cancer potency slope, and both methods assume a 70 kg adult and consumption of 2 liters of water per day, there are several important differences. One difference is that MCLGs for chemicals that are known or likely carcinogens are usually set equal to zero, while CWA section 304(a) criteria for carcinogens are based on an incremental cancer risk level and are never set equal to zero. For chemicals with limited evidence of carcinogenicity, the MCLG is usually based on the chemical's reference dose (RfD) for noncancer effects with the application of an additional uncertainty factor of 1 to 10 to account for its possible carcinogenicity. In contrast, the 1980 CWA section 304(a) criteria guidelines do not differentiate among carcinogens with respect to the weight of evidence grouping; all were derived based on lifetime carcinogenic risk levels.

Another important difference between the two methodologies is that a single determined risk value (single reference dose or single cancer risk value within the 10^{-4} to 10^{-6} range) is used in setting an MCLG, while CWA section 304(a) criteria have been derived for each of the three incremental risk levels spanning 10^{-5} to 10^{-7}, with the decision on which value to adopt left to the State or Tribe.

Another important methodological difference is in the approach to accounting for exposure sources. MCLGs for RfD-based chemicals developed under the SDWA follow a relative source contribution (RSC) approach in which the percentage of exposure that is attributed to drinking water is determined relative to the total exposure from all sources (e.g., drinking water, food, air). The rationale for this approach is to ensure that an individual's total exposure to a chemical does not exceed the RfD. To develop CWA human health criteria for noncarcinogens, the 1980 CWA National Guidelines recommended taking non-fish dietary sources and inhalation into account. However, data on these other sources were generally not available. Therefore, it was typically assumed that an individual's total exposure to a chemical came solely from drinking water from the water body and consumption of fish and shellfish living in the water body. Also, CWA criteria are based on a prediction of exposure from fish and shellfish using a bioconcentration factor (BCF) to estimate the bioconcentration of the individual chemical, and a fish/shellfish consumption rate. To date, under the current MCLG methodology, BCFs have not been used in the exposure estimates and fish/shellfish consumption rates have been only marginally accounted for (e.g., via general FDA dietary estimate or conservative default assumption).

Because of the differences in the approach to exposure and the basis of toxicity values, the health-based drinking water goal (MCLG) is sometimes more stringent than the CWA human health criterion (304(a) criterion). However, the opposite is sometimes true. An example of the former is 1,4-dichlorobenzene, for which both the MCL and MCLG are 75 ug/L and the 304(a) criterion (for protection of human health from the exposures of drinking water and consuming contaminated fish) is 400 ug/L. In this case, the MCLG was developed based on an assumption that 20% of the total exposure is from drinking water (the RSC factor applied to this noncarcinogen), whereas the CWA criterion effectively assumes that non-water exposure is negligible. Additional sources of difference between the two values are: (1) the BCF/BAF for 1,4-dichlorobenzene is low and thus does not make the 304(a) value significantly lower; (2) the MCLG was derived from an RfD of 0.1 mg/kg/day, while the 304(a) criterion utilized an Acceptable Daily Intake (ADI, now replaced by the use of RfDs) of 0.013 mg/kg/day; and, (3) the MCLG included a safety factor of 10,000, whereas the water quality criterion included a safety factor of only 1,000.

In contrast, for noncarcinogens where the BCF/BAF is high, the CWA criteria may be roughly equivalent or more stringent than the health-based drinking water levels because of the considerable exposure via fish/shellfish consumption that is assumed in deriving the CWA criteria. As with the previous example, the difference may be compounded if the toxicological values have a different basis. An example is endrin, for which the MCL and MCLG are 2 ug/L and the CWA section 304(a) human health criterion (again, for protection from the exposures of drinking water and consuming contaminated fish) is 0.76 ug/L. In this case, the drinking water level is, again, developed based on the RSC assumption of 20%, whereas the CWA criterion assumes that non-water exposure is negligible. However, the BCF/BAF for endrin is quite high (3,970) and drives the 304(a) value significantly lower. Furthermore, the MCLG was derived from an RfD of 3.0×10^{-4} mg/kg/day, while the CWA criterion utilized an ADI of 1.0×10^{-3} mg/kg/day. With endrin, both the MCLG and the water quality criterion included a safety factor of 100.

Of course as noted above, the MCL takes into account the cost or availability of treatment technology or analytical methods, and may be much less stringent than the CWA human health criterion, regardless of the

exposure assumptions or toxicological basis (e.g., 1,1,2-trichloroethane).

Because of the differing methods used to implement the SDWA and the CWA, EPA has recommended that, where consideration of available treatment technology, costs, or availability of analytical methodologies has resulted in MCLs that are less protective than MCLGs or CWA section 304(a) criteria, States and Tribes should consider using MCLGs and/or health-based CWA section 304(a) criteria to protect surface waters that are designated for water supply use under the State's or Tribe's water quality standards. Furthermore, when adopting water quality criteria to protect a surface water designated for drinking water supply use, States and Tribes should carefully consider what value (e.g., the MCLG or the 304(a) value) provides a defensible estimate of the water quality level necessary to fully protect the use, and whether relevant exposure routes have been adequately considered in the derivation of each value.

EPA stated its policy on the use of Section 304(a) human health criteria versus MCLs in 45 FR 79318, November 28, 1980. Additionally, a memorandum from R. Hanmer to the EPA Regional Water Management Division Directors dated December 12, 1988, provided detailed guidance with regard to this policy. Specifically, for the protection of public water supplies, EPA encouraged the use of MCLs. When fish ingestion is considered an important activity, EPA recommended the use of 304(a) criteria to protect human health. In all cases, if a 304(a) criterion did not exist for a chemical, an MCL was deemed a suitable level of protection.

The forthcoming proposed human health criteria guidelines (scheduled for publication in 1998 and cited above) are expected to recommend a slightly different approach. Although EPA considers the use of MCLs to protect surface waters under the CWA to be acceptable in the absence of 304(a) criteria, EPA expects to recommend that:

—MCLs only be used when they are numerically the same as the MCLG and only when the sole concern is the protection of public water supply sources (e.g., where the chemically toxic form in water is not the form found in fish tissue and, therefore, fish ingestion exposure is not an issue of concern);

—where consideration of available treatment technology, costs, or availability of analytical methodologies has resulted in MCLs that are different than MCLG values or 304(a) criteria, States and Tribes consider using MCLGs and/or 304(a) criteria to protect surface waters designated for water supply use;

—where fish consumption is an existing or potential activity, States and Tribes ensure that their adopted human health criteria adequately address this exposure route;

—where fish consumption is a designated use, States and Tribes use 304(a) criteria to protect that use because fish consumption and bioaccumulation are explicitly addressed by the 304(a) methodology;

—where water monitored at existing drinking water intakes has concentrations at or below MCLGs, then the water could be considered to meet a CWA designated use as a drinking water supply and a criterion reflecting that level could be adopted; and,

—for carcinogens where the MCLG is equal to zero, States and Tribes base a criteria value at the drinking water intake on an acceptable cancer risk level (i.e., a level within the range of 10–4 to 10–6), to protect human health. It is not intended that MCLGs of zero would be used as the basis for State or Tribal water quality criteria.

As States and Tribes may be more stringent than EPA, States and Tribes may adopt an MCL or MCLG as a water quality criterion that is more stringent than EPA's recommended section 304(a) criterion. In situations where a recommended 304(a) criterion is less protective than an MCL, EPA expects to recommend in the 1998 human health criteria methodology proposal use of the MCL instead of the recommended 304(a) criterion because it would help to ensure adequate source water protection and avoid costly compliance problems for downstream water supply utilities.

EPA has considered extensively this issue of equivalency between the drinking water component of CWA section 304(a) criteria and MCLGs or MCLs. EPA expects to move toward similar assessment methodologies (including its exposure and relative source contribution [RSC] policies) for deriving CWA criteria and MCLGs. Consistent exposure evaluation methodologies for deriving CWA 304(a) criteria for human health protection *and* MCLGs under SDWA, would, over time, eliminate the need to consider using MCLs for adopting State water quality standards. In the meantime, where there are differences between the MCLG and the 304(a) criteria for human health protection, EPA expects to continue to recommend using as the water quality criterion the value that, in the judgement of the State or Tribe, best accounts for the relevant routes of exposure. Of course, EPA will also approve use of the more stringent value.

Request for Comments on Human Health Criteria

EPA seeks public comment on the following questions:

1. Should the regulation require, or should guidance recommend, higher intake assumptions for site-specific or regional situations when subpopulations that are highly exposed have been identified? If so, what should be the basis for such intake assumptions?

2. Should the regulation be modified to clarify (beyond the guidance being proposed in 1998) the use of MCLs and MCLGs in State water quality standards? [Note: Comments on the establishment of similar assessment methodologies for deriving CWA criteria and MCLGs should be made during the public comment period following the anticipated 1998 Human Health Criteria Methodology proposal.]

15. Microbiological Criteria

Currently EPA has a criteria document titled "Ambient Water Quality Criteria for Bacteria—1986" which provides information on microbiological indicator organisms, sampling frequencies, and risk based criteria guidance which States and Tribes can use in establishing State or Tribal standards, especially for recreational waters. The indicators used are the Enterococci for fresh and salt waters (33/100mL and 35/100mL respectively) and *E. Coli* for fresh waters (126/100mL). It is recommended that sampling be performed on a weekly basis and the acceptability criteria are based on a running average level of the indicators on a monthly basis. The EPA Office of Research has completed a new Enterococci method (See "Membrane Filter Test Method for Enterococci in Water," EPA–821–R–97–004, May 1997). This indicator method allows samples to be read in 24 hours rather than the 48 hours of the old Enterococci method.

In 1997, EPA established the Beaches Environmental Assessment Closure and Health Program ("BEACH" Program) to protect the health of beach goers through assistance to State, Tribal, and local health officials in designing, developing and implementing beach monitoring and advisory programs. The BEACH Program will also survey local beach authorities about their programs and develop an Internet website to provide the public with information on local beach water quality conditions,

beach advisories and closures, and health risks associated with swimming in contaminated water.

While the Enterococci and *E. Coli* indicators and criteria guidance are satisfactory for determining risks from acute gastrointestinal disease they are not necessarily acceptable for determining risks from enteric viruses nor from pathogenic enteric protozoa such as *Giardia* and *Crypto Sporidium* since these pathogens are much more resistant environmentally and experience different treatment effectiveness. EPA is currently evaluating how it may develop human health criteria for protection from these organisms.

EPA may conduct additional research to develop indicator methods for non-enteric pathogens that cause skin, respiratory, eye, ear, and throat infections that are not detected by the current indicator methods. EPA also intends to examine the phenomenon of regrowth of the current indicators on soil and vegetation in tropical areas, and if deemed necessary add indicator development studies to replace the current indicators in tropical recreational areas. Further studies are proposed to examine rapid chemical indicators of fecal pollution to see if a tiered sampling protocol can be established for recreational water monitoring. Also, EPA plans to examine the development of improved monitoring strategies that States, Tribes and local authorities could use to assess the true impact of pollution during wet weather events. Finally, EPA will examine various computer models that could be used to predict microbial pollution from storm water events in watersheds and at recreational areas. These models would be validated by microbiological monitoring.

Request for Public Comment on Microbiological Criteria

EPA seeks public comment on the following questions:

1. Where and how is it best to conduct future programs to determine the safety of recreational waters?

2. What communication strategies would best inform the public about pathogen exposures?

3. What guidance should EPA provide to States, Tribes, and local governments on how to conduct beach monitoring activities?

16. Nutrient Criteria

In the National Water Quality Inventory 1994 Report to Congress, nutrients (nitrogen and phosphorous) are cited as one of the leading causes of water quality impairment in our Nation's rivers, lakes and estuaries. While nutrients are essential to the health of aquatic ecosystems, excessive nutrient loadings can result in the growth of aquatic weeds and algae, leading to oxygen depletion, increased fish and macro invertebrate mortality and other water quality impairments. In December 1995, EPA held a National Nutrient Assessment Workshop with the goal of developing a comprehensive nutrient strategy which would provide tools that can be used in assessing and controlling nutrients in all types of water bodies. Major conclusions from that workshop were: (1) a single set of national nutrient criteria is not a realistic goal, and (2) nutrient criteria need to be set on an ecoregional or watershed basis. EPA has since been developing a national nutrient strategy in order to communicate the specific approach and activities necessary to meet the goals and major conclusions of the National Nutrient Assessment Workshop.

On February 14, 1998, the "Clean Water Action Plan" was announced by the Administrator of EPA and the Secretary of Agriculture. The "Clean Water Action Plan" is a blueprint for restoring and protecting the Nation's precious water resources. As part of this Action Plan, EPA intends to identify the major sources of nitrogen and phosphorous in our waters and to identify actions to address these sources. In particular, EPA intends to accelerate development of nutrient criteria guidance for waters in every geographic region in the country, so that EPA and the States and Tribes can begin implementing a criteria system for nitrogen and phosphorous runoff for lakes, rivers, and estuaries by the year 2000. EPA will assist States and Tribes in adopting numeric water quality criteria for nitrogen and phosphorous, which EPA expects will take the form either of State- or Tribe-derived criteria where data is available, or criteria based on EPA default ranges applicable to their ecoregion(s). Where a State or Tribe does not adopt appropriate nutrient standards, EPA intends to begin the process of promulgating nutrient standards. To support meeting these expectations, EPA anticipates the following actions described below.

First, EPA intends to publish a National Nutrient Strategy which will present currently available tools for assessing eutrophication, identify important implementation issues related to controlling eutrophication, and provide the Agency's plan for developing water body-type guidance on nutrient over enrichment.

This national strategy will also present EPA's expectations for action on the part of States and Tribes, namely, development of numeric nutrient criteria and standards on a regional/watershed basis. Second, by the end of the year 2000, EPA expects to publish the water body-type guidance documents which would serve as "user manuals" for assessing and controlling nutrient over enrichment for specific water body types: lakes and reservoirs, rivers and streams, and estuarine and coastal waters. These documents will include techniques for assessing the trophic state of a water body and a methodology for developing region-specific nutrient criteria. In each document, EPA intends to provide regional nutrient ranges for phosphorus and nitrogen (and other parameters), which EPA would expect States and Tribes to use in setting nutrient criteria in the absence of any criterion that has been developed site-specifically. EPA intends to use existing State and Tribal projects and data, supplemented with new regional case studies and demonstration projects that are being conducted to collect information in data-limited areas of the country. An important component in developing default nutrient values is determining the appropriate scale of application (e.g., watershed, ecoregion, Northern lakes/Southern lakes, etc.). Finally, in order to promote the use of the water body-specific guidance, and ensure the development of nutrient criteria on a watershed or ecoregional basis nationwide, EPA will undertake several activities, including: (1) training in EPA regions and States, and Tribes, through the use of Regional Technical Assistance Centers; (2) appointing EPA Regional Nutrient Coordinators who will oversee the development and implementation of nutrient criteria and standards in each of the EPA Regions; and (3) offering assistance grants which will provide financial support to States and Tribes in their efforts to assemble existing data, including nutrient endpoint data, and to establish nutrient criteria either by watershed or ecoregion, where sufficient data are available.

Request for Comments on Nutrient Criteria

EPA requests comment on the following questions:

1. Should the regulation specifically require States and Tribes to adopt and implement numeric nutrient criteria?

2. What capabilities do States and Tribes have right now for developing and implementing water quality criteria for nutrients?

3. What are the institutional impediments to collecting nutrient data and developing nutrient standards, for example, staff numbers and expertise and financial resources?

4. Which States or Tribes are using an ecoregion or watershed approach to develop numeric nutrient standards (EPA is aware of some States doing this)? For those States and Tribes that do not, on what scale do their nutrient standards apply—statewide or by water body type?

D. Antidegradation

1. Background

The Federal antidegradation policy has its roots in the Water Quality Act of 1965 (Pub. L. 89–234), which stated in its declaration of policy, ''The purpose of this Act is to enhance the quality and value of our water resources and to establish national policy for the prevention, control, and abatement of water pollution.'' Policy guidelines established by the Department of the Interior in 1966 for use in the approval of States' water quality standards contained additional direction on antidegradation, stating that ''In no case will standards providing for less than existing quality be acceptable'' and ''The water quality standards proposed by a state should provide for: . . . The maintenance and protection of quality and use or uses of waters now of a high quality or of a quality suitable for present and potential future uses.'' Secretary of the Interior Udall further defined the Federal policy on antidegradation in 1968, when he said that each State was to include a statement similar to the following in their water quality standards:

> Waters whose existing quality is better than the established standards as of the date on which such standards become effective will be maintained at their existing high quality. These and other waters of a State will not be lowered in water quality unless and until it has been affirmatively demonstrated to the State water pollution control agency and the Department of the Interior that such change is justifiable as a result of necessary economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. This will require that any industrial, public or private project or development which would constitute a new source of pollution or an increased source of pollution to high quality waters will be required, as part of the initial project design, to provide the highest and best degree of waste treatment available under existing technology, and, since these are also Federal standards, these waste treatment requirements will be developed cooperatively.

The Federal Water Pollution Control Act Amendments of 1972 (Pub. L. 92–500) continued to emphasize the prevention of pollution and, in 1973, EPA developed guidance for State water quality standards under the Amendments that essentially repeated the 1968 statements of Secretary Udall.

In 1975, EPA promulgated regulations at 40 CFR 130.17(e) that required the States to develop an antidegradation policy and implementation procedures. The 1975 rule contained provisions that are very similar to those in 40 CFR 131.12, and provided protection for existing uses, high quality waters, high quality waters that constituted an outstanding National resource, and waters impaired by thermal discharges. EPA issued final rules on November 8, 1983 (48 FR 51400) that retained, with certain changes, the 1975 antidegradation policy and incorporated it into the regulations at 40 CFR 131.12. The changes to the 1975 antidegradation policy are discussed in the preamble to the 1983 rulemaking (48 FR 51402–51403), but they were generally intended to clarify the policy with no change in coverage or effect. An exception to this was the change in the provisions applicable to outstanding National resource waters, which eliminated the strict ''no degradation'' requirement in favor of a limited exception for activities that result in temporary and short-term lowering of water quality. The 1983 regulation (40 CFR 131.12(a)) provides that a State or Tribe is to identify its method for implementing the antidegradation policy, i.e., decision measures for assessing activities that may impact the integrity of a water body.

The 1987 Water Quality Act Amendments to the Clean Water Act (CWA) explicitly incorporated reference to antidegradation policies in section 303(d)(4)(B), which requires that such antidegradation requirements be satisfied prior to modifying certain NPDES permits to include less stringent effluent limitations (this concept is referred to as antibacksliding).

On March 23, 1995, EPA published the final Water Quality Guidance for the Great Lakes System (the Great Lakes Guidance). The Great Lakes Guidance includes an antidegradation component that is intended to work in conjunction with the other components of the Great Lakes Guidance to address the most pressing threats to water quality in the Great Lakes. In order to achieve this end, the focus of the antidegradation component is on decisions pertaining to new or increased loadings of specified bioaccumulative chemicals of concern within the Great Lakes basin. For other types of pollutants, States and Tribes are required to comply with the existing regulations at 40 CFR 131.12.

In the course of establishing a framework for making decisions regarding increased loadings of bioaccumulative chemicals of concern, the Great Lakes Guidance touches on a number of issues. The Great Lakes Guidance provides a procedure for identifying high quality waters on a pollutant-by-pollutant basis. The Great Lakes Guidance also defines how a significant lowering of water quality will be identified for purposes of determining whether or not an antidegradation review is required. Finally, the Great Lakes Guidance includes implementation procedures that describe how an antidegradation review should be conducted. In all cases, the antidegradation components of the Great Lakes Guidance are tailored to the control of bioaccumulative chemicals of concern; other solutions may be necessitated by environmental threats faced elsewhere in the Nation.

EPA's current thinking is that on a national scale, antidegradation is not being used as effectively as it could be and that a structured national debate on antidegradation is key to improvement. The debate needs to identify deficiencies in antidegradation policy and implementation provisions and begin the process of strengthening antidegradation as a meaningful mechanism to attain and maintain water quality standards. EPA invites comments and suggestions on the three-tiered approach currently in use and described below, as well as possible other approaches to more effectively accomplish the intent of the antidegradation requirements. As part of the ''Clean Water Action Plan'' announced on February 14, 1998 by the Administrator of EPA and the Secretary of Agriculture, EPA plans to develop additional guidance on Antidegradation. The discussion below articulates current EPA thinking in several areas of antidegradation. Elements of this current EPA thinking will likely be incorporated into the Antidegradation guidance EPA develops under the ''Clean Water Action Plan.''

2. General Description of Antidegradation

An antidegradation policy performs an essential function as part of the of States' and Tribes' water quality standards. Designated uses establish the water quality goals for the water body, water quality criteria define the minimum conditions necessary to achieve the goals and an antidegradation policy specifies the framework to be used in making

decisions regarding changes in water quality. The intent of an antidegradation policy is to ensure that in all cases, at a minimum, water quality necessary to support existing uses is maintained (tier 1), that where water quality is better than the minimum level necessary to support protection and propagation of fish, shellfish and wildlife, and recreation in and on the water ("fishable/swimmable"), that water quality is also maintained and protected unless, through a public process, some lowering of water quality is deemed to be necessary to allow important economic or social development to occur (tier 2), and to identify water bodies of exceptional recreational or ecological significance and maintain and protect water quality in such water bodies (tier 3). Antidegradation plays a critical role in allowing States and Tribes to maintain and protect the finite public resource of clean water and ensure that decisions to allow reductions in water quality are made in a public manner and serve the public good.

The watershed approach may be a powerful tool to achieving antidegradation goals (i.e., maintaining the chemical, physical, and biological integrity of the Nation's waters). Many and varied uses are made of the Nation's waters and in some cases, these uses conflict. The ability of particular waters to accommodate all uses is limited. High quality surface waters are an important and finite resource whose availability affects the health, welfare, and economic well-being of all the citizens of the United States. When operating properly, the antidegradation policies of States and Tribes ensure that water quality is conserved where possible and lowered only when necessary, and that those affected by the lowering of water quality have a say in the final decision. As a result, antidegradation policies are well-suited to assist States, Tribes and local communities in establishing and achieving watershed goals. Sensitive or highly valued water bodies can be identified and protected from degradation through outstanding national resource water (ONRW) or related designations. In other water bodies, where water quality is better than the minimum necessary to support fish and aquatic life and recreation, water quality should be maintained unless there is a demonstrated need to lower water quality. Consistent with the watershed approach and community-based environmental management, States' and Tribes' antidegradation policies and procedures can be a basis for a systematic and accessible planning process that protects against development having negative impacts on water quality. Additional authorities exist at the local level beyond State, Tribal and federal authorities which may allow additional protections to be put in place in accordance with the watershed management plan.

The water quality standards regulation requires each State and authorized Tribe to adopt, as part of its water quality standards, an antidegradation policy consistent with 40 CFR 131.12 and identify implementation methods for such a policy. This antidegradation policy provides a multi-level approach for the protection of water quality and applies to both point and non-point source activities. The level of protection that is provided to a specific segment depends upon a number of factors (e.g., a key determinant is whether existing water quality is found to exceed levels necessary to support "fishable/swimmable" uses). Antidegradation requirements are typically triggered when an activity is proposed that may have some effect on existing water quality. Such activities are reviewed to determine, based on the level of antidegradation protection afforded to the affected water body segment, whether the proposed activity can be authorized. "Antidegradation reviews" under all three tiers of antidegradation should be documented and subjected to public review and comment (e.g., as part of the public review of the water quality certification, NPDES permit, or other regulatory action).

Identifying the universe of activities that trigger antidegradation requirements is a fundamental and often controversial issue because of the number and variety of activities that can affect water quality. Clearly, a wide range of activities that affect water quality may be subject to antidegradation requirements, and States and Tribes have considerable flexibility in applying antidegradation policies.

The federal antidegradation requirements do not create, nor were they intended to create, State or Tribal regulatory authority over otherwise unregulated activities. It is the position of EPA that, at a minimum, States and authorized Tribes must apply antidegradation requirements to activities that are "regulated" under State, Tribal, or federal law (i.e., any activity that requires a permit or a water quality certification pursuant to State, Tribal or federal law, such as CWA § 402 NPDES permits or CWA § 404 dredge and fill permits, any activity requiring a CWA § 401 certification, any activity subject to State or Tribal nonpoint source control requirements or regulations, and any activity which is otherwise subject to State or Tribal regulations that specify that water quality standards are applicable). Where a State or Tribe wishes to require antidegradation reviews for activities that are not currently "regulated" under this definition, EPA recommends that a complete discussion of the activities requiring an antidegradation review be included in the State or Tribal water quality standards or other State or Tribal regulation. Although States and authorized Tribes have discretion to apply antidegradation requirements more broadly than minimally required, application of antidegradation requirements to activities that are otherwise unregulated under State, Tribal, and federal water law is not required by the federal water quality standards regulation.

EPA's current thinking is that antidegradation principles can and should be considered in connection with a number of activities even where application of the antidegradation review requirements is not explicitly required by the regulation. EPA is interested in identifying ways to better implement antidegradation, especially for activities such as urban and agricultural run-off. As part of general planning for development that is likely to affect surface water quality, it makes sense to consider existing ambient water quality and evaluate available means to protect that water quality. Thus, although a State or Tribe may not require a formal antidegradation review for a particular activity (e.g., an unregulated nonpoint source), there may still be value in applying the antidegradation principles in an analysis of potential environmental impacts.

In sum, EPA's current thinking is that the antidegradation policy is significantly underused as a tool to attain and maintain water quality and plan for and channel important economic and social development that can impact water quality. EPA believes this is especially true for nonpoint source run-off. This ANPRM provides an opportunity to identify and evaluate options for clarifying and strengthening antidegradation policy and its implementation.

States and authorized Tribes often submit implementation procedures to EPA for review as part of the water quality standards triennial review required by section 303(c) of the Act. This enables EPA to determine if the implementation procedures fulfill the requirements of the antidegradation

policy. The antidegradation policy itself is expressly required by 40 CFR 131.20(c) to be submitted to EPA for review. EPA's longstanding policy is that the implementation procedure should also be submitted to EPA for review. Often, however, implementation procedures are not submitted to EPA. EPA's current thinking is that an important change to the regulation would be to clarify under 40 CFR section 131.20(c) that State and Tribal antidegradation implementation procedures (in addition to the policy) must be included in the submittal of a State's or Tribe's water quality standards. Such a change could establish the foundation for additional substantive changes to the regulation concerning national norms for antidegradation implementation procedures.

A State's or Tribe's implementation method is on occasion so constructed as to essentially set aside the intent of the antidegradation policy. EPA has disapproved this aspect of State standards where the implementation procedure is inconsistent with the policy. Revising the regulation to specify requirements addressing the content of such implementation procedures (e.g., a core set of issues that must be resolved), and clarifying that implementation procedures must be included in the submittal package, may help to clarify EPA's role in determining whether State or Tribal antidegradation implementation procedures adequately uphold and implement the State's or Tribe's antidegradation policy. In addition, specifying in the regulation the basic elements of an implementation procedure could serve to better establish national norms for State and tribal antidegradation procedures. EPA is considering whether it would assist States and Tribes if the regulation were amended to identify the basic elements that must be included in an antidegradation implementation method.

Guidance on developing antidegradation implementation methods is provided through EPA's Regional Offices. EPA has not issued national guidance on these implementation methods and is interested in comments on whether national guidance on antidegradation implementation methods is needed, and whether elements of such guidance should be referenced or included in the Regulation.

Request for Comments on General Antidegradation Policy

EPA requests comment on the following questions:

1. What changes or clarifications could be made to the current tiered approach to protecting waters under antidegradation that would streamline and enhance antidegradation implementation?

2. Should the regulation be amended to identify the basic elements that must be included in an antidegradation implementation method and would such changes assist States and Tribes in understanding the requirements and in utilizing the flexibility available?

3. Is national guidance on antidegradation implementation methods needed and should elements of such guidance be referenced or included in the Regulation?

3. 40 CFR 131.12 (a)(1) "tier 1"

Section 131.12 (a)(1) of the antidegradation policy contained in the water quality standards regulation requires that existing uses and the water quality necessary to protect them be maintained and protected. This provision, in effect, establishes the floor of water quality in the U.S. It also protects the environment where the existing use of a water body happens to be better than the use designated by the State or Tribe. An existing use as defined in 40 CFR 131.3 can be established by demonstrating that a use has actually occurred since November 28, 1975, or that the water quality is suitable to allow such uses to occur, whether or not such uses are designated uses for the water body in question. All waters of the U.S. are subject to tier 1 protection. In general, waters that are subject to only tier 1 antidegradation policies are those water bodies that do not exceed the CWA Section 101(a)(2) goals, or do not have assimilative capacity to receive additional quantities of a pollutant(s) without jeopardizing the existing use. Existing uses and additional issues related to defining them and their relationship to designated uses are further discussed in section III(B)(3) of this document.

Antidegradation policies are generally implemented for tier 1 by a review procedure that evaluates any discharge to determine whether it would impair an existing use. Prior to authorizing any proposed activity, a State or authorized Tribe shall ensure that water quality sufficient to protect existing uses fully will be achieved. In addition to ensuring that existing uses will be protected, the State or Tribe should ensure that all existing uses are designated in accordance with 40 CFR 131.10(i).

a. Tier 1 Implementation. In order to implement tier 1, a State or Tribe must define what is meant by the term "existing in-stream water use" (40 CFR 131.12(a)(1)) and must also be able to identify the level of water quality that is required to permit an existing use to continue to occur. Section 131.3 defines existing uses as, "those uses actually attained in the water body on or after November 28, 1975 * * *" Traditionally, when establishing designated uses, States and Tribes tend to define uses in terms of broad classes, such as warm water fishery or secondary contact recreation. Inherent in each of the broad use categories are specific uses that may be affected by a change in water quality. For example, a warm water fishery designated use may include the existing use of large mouth bass fishery. Many people would be upset if the warm water fishery designated use was protected in such a way as to allow a decline in the bass population. The central question faced by States and Tribes in determining whether or not a proposed action will impact existing uses is whether each specific use within a use class must be maintained (each individual type of species), or whether only the use class itself must be maintained (allow changes in species composition, but maintain a fishery). State and Tribal interpretations of this requirement vary considerably and are often tied to the degree of precision the State or Tribe achieves in defining designated uses.

Many States and some Tribes have addressed these questions by using the same degree of precision for both designated and existing uses. EPA's current thinking is that this is an acceptable approach as long as the State's or Tribe's designated uses and criteria applicable to those uses are adequate to ensure that existing uses are maintained under the federal antidegradation provisions. It would not be acceptable, for example, for a state to allow the loss of an existing natural cold water community in favor of a warm water community because both satisfy the general use designation of "aquatic life." Nor would it be acceptable to allow shifts from existing pollution intolerant communities to communities that tolerate degraded conditions. The advantage of this approach is that the same criteria used to protect the designated use can be assumed to also protect the existing use. Under this approach, however, the protection afforded to existing uses is limited by the degree of refinement associated with the designated uses. States and Tribes that have more specific designated uses (i.e., including a number of use sub-categories) can potentially provide more protection by addressing more subtle changes to the existing use. States and

Tribes with less specific designated uses would have less precision associated with their existing use protection scheme.

An important tier 1 implementation issue concerns how a State or Tribe will prevent negative or harmful impacts to existing uses when water quality criteria that have been established to protect the designated uses are not adequate to protect the existing uses. For example, a regulated discharge of uncontaminated sediment may result in significant negative or harmful impacts to aquatic life habitat and loss of aquatic life use. In such cases, where clean sediment or siltation criteria have not been developed for the site, and where the State or Tribe has not established clear procedures to implement narrative criteria governing sedimentation, it may be difficult to prohibit such loss of use, particularly where a State or Tribe has not adopted biological criteria.

A second example arises where a proposed activity will result in the discharge of a substance for which numeric criteria have not been adopted by the State or Tribe, but sufficient data to derive criteria or a numeric translation of the narrative criteria are available. Where a range of numeric criteria can potentially be justified for the particular substance to protect the designated and/or existing use, it may be difficult or contentious for the State or Tribe to derive effluent limits protective of the existing use.

A third example arises where a proposed hydrologic modification will result in diminished flow in a water body and create the potential for loss of existing aquatic life use either through increased temperatures or turbidity, or loss of habitat. State and Tribal water quality criteria generally do not describe minimum acceptable flows and may not, by themselves, adequately protect against such loss of use. In *P.U.D. No. 1 of Jefferson County and City of Tacoma* v. *Washington Department of Ecology,* (114 S.Ct 1900 (1994)), the Supreme Court ruled that State certifications under section 401 of the CWA may include conditions to ensure compliance not only with a State's water quality criteria, but also with a State's designated uses or antidegradation policy. The Court concluded that a State could require, in this case, a dam to be designed and operated in such a way as to maintain stream flows necessary to protect the designated use of a stream. While this specific case had to do with a dam and stream flows necessary to protect a use, it should be noted that the opinion applies more broadly than to just flow and that in addition to maintenance of in-stream flows to protect water quality standards, States may also apply any other parameter that may not be specifically identified in the State's standards. EPA notes that where such implementation methods are spelled out, as a practical matter, they may be more easily implemented. (See related discussion in Section III.B. on uses). EPA believes that tier 1 methods or policies for addressing situations such as those described above may need to be included in an antidegradation implementation procedure.

Request for Comments on Antidegradation Tier 1

EPA specifically requests public comment on the following questions:

1. Do State and Tribal programs under the existing regulation do an adequate job of protecting existing in-stream uses?
2. Is a more detailed definition of "existing in-stream water uses" needed in the regulation? Should it be the same as "existing uses?'
3. Should the regulation define what constitutes loss of an existing in-stream water use?
4. Should a clear approach to maintaining and protecting existing uses that may not be adequately protected by strict application of water quality criteria be a required element of an antidegradation implementation procedure?
5. Should the regulation specify under antidegradation that protection of both existing and designated uses is required?

4. 40 CFR 131.12 (a)(2) "tier 2"

"Tier 2" (§ 131.12(a)(2)) antidegradation policies are intended to protect the waters in which water quality is better than necessary to support propagation of fish, shellfish and wildlife, and recreation in and on the water body. These are called high quality waters. For such high quality waters, existing water quality must be maintained and protected unless it is demonstrated that a lowering of water quality is necessary to accommodate important economic or social development. The protection of high quality waters envisioned by the regulation encourages a systematic, public decision making process for determining whether or not to allow limited deterioration of water quality in high quality waters.

a. Identification of "High Quality" Waters. Identifying waters that are "high quality" and subject to tier 2 protection is an important antidegradation issue. The water quality standards regulation requires application of tier 2 requirements "where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water." However, the regulation does not include specific guidelines for identifying high quality waters. Various EPA guidance documents, including those issued by EPA's Regional offices, make a variety of suggestions concerning approaches to defining tier 2 waters. Not surprisingly, States and Tribes have developed various ways to identify tier 2 waters.

Existing approaches for identifying high quality waters fall into two basic categories: (1) pollutant-by-pollutant approaches, and (2) water body-by-water body approaches. States and Tribes following the first approach determine whether water quality is better than applicable criteria for specific pollutants that would be affected by the proposed activity. Thus, available assimilative capacity for any given pollutant is always subject to tier 2 protection, regardless of whether the criteria for other pollutants are satisfied. Such determinations are made at the time of the antidegradation review (i.e., as activities that may degrade water quality are proposed). States and Tribes following the second approach weigh a variety of factors to judge a water body segment's overall quality. Such determinations may be made prior to the antidegradation review (i.e., the State or Tribe may assign "high quality" designations in the State or Tribal standards), or during the course of the antidegradation review. Under this water body-by-water body approach, sometimes referred to as the "designational" approach, assimilative capacity for a given pollutant may not be subject to tier 2 protection if, overall, the segment is not deemed "high quality."

There are advantages and disadvantages to each approach. EPA's current thinking is that neither approach is clearly superior and that either, when properly implemented, is acceptable. EPA has approved both approaches in State standards. Some States and Tribes have found the pollutant-by-pollutant approach to be easier to implement because the need for an overall assessment considering various factors is avoided. Also, decisions are driven strictly by water column data (i.e., rather than judgments concerning a segment's overall value or quality) and thus may be less susceptible to challenge. The pollutant-by-pollutant approach may result in more waters receiving some degree of tier 2 protection because it would cover

waters that are clearly not attaining goal uses (i.e., waters which are not supporting ''fishable/swimmable'' goal uses but that possess assimilative capacity for one or more pollutant).

The water body-by-water body approach, on the other hand, allows for a weighted assessment of chemical, physical, biological, and other information (e.g., unique ecological or scenic attributes). In this regard, the water body-by-water body approach may be better suited to EPA's stated vision for the water quality standards program: refined designated uses with tailored criteria, complete information on uses and use attainability, and clear national norms. The water body-by-water body approach preserves water quality even if criteria for certain pollutants are not attained or if criteria for certain uses may be limited, such as fish consumption. This approach also allows for the high quality water decision to be made in advance of the antidegradation review (and included in the water quality standards for the segment), which may facilitate implementation. A water body-by-water body approach also allows States and Tribes to focus limited resources on protecting higher-value State or Tribal waters. The water body-by-water body approach can also distinguish between high quality waters and high water quality and preserve high quality waters on the basis of physical and biological attributes, rather than high water quality attributes alone. However, the flexibility of the water body-by-water body approach is also its principal disadvantage where a State or Tribe does not develop inclusive qualification criteria. For example, where a State's or Tribe's implementation guidelines define a narrow universe of waters, many deserving high quality waters may not receive tier 2 protection. Thus water quality may actually decrease in the waters not classified for tier 2 protection without a public review of the development decision. Also, a potential problem can arise if the process of identifying high quality waters becomes so complicated, resource-intensive, and data-intensive that the primary purpose of tier 2 (i.e., seeking to maintain and protect existing quality by identifying whether there are reasonable less-degrading or non-degrading alternatives) is not adequately accomplished. In other words, the limited resources available for water quality protection could be spent on the identification process at the expense of analysis of the necessity for degradation.

b. Tier 2 Implementation. The current regulation provides a great deal of flexibility to States and Tribes in implementing tier 2 requirements. Some States and Tribes devote little effort to implementing their tier 2 requirements, some States and Tribes apply tier 2 requirements in an inconsistent or infrequent manner, and other States and Tribes have active programs that routinely and consistently implement tier 2. In general, those States and Tribes that actively implement their tier 2 requirements do so by conducting an antidegradation review to determine whether proposed activities that might affect water quality may be authorized. EPA's current sense is that the antidegradation policy, in reality, has little effect on decisions related to surface water quality unless the State or Tribe adopts an implementation procedure and uses it. EPA currently reviews all State and Tribal water quality standards at the time of adoption/revision to ensure they establish a clear approach to implementation. A brief discussion of a number of the major implementation issues is presented below.

i. Triggers for tier 2 Review. Although not discussed in 40 CFR 131.12 of the water quality standards regulation, State and on occasion Tribal tier 2 implementation procedures often include guidelines which are used to determine when the water quality degradation that will result from a proposed activity is significant enough to warrant further antidegradation review. Where the degradation is not significant, the antidegradation review is typically terminated for that proposed activity. The significance evaluation is usually conducted on a pollutant-by-pollutant basis, even where a water body-by-water body approach is used to identify high quality waters, and significant degradation for any one pollutant triggers further review for that pollutant.

Applying antidegradation requirements only to activities that will result in significant degradation is a useful approach that allows States and Tribes to focus limited resources where they may result in the greatest environmental protection. However, there is a great deal of variation in how States and Tribes define significant degradation. Significance tests range from simple to complex, involve qualitative or quantitative measures or both, and may vary depending upon the type of pollutant (e.g., the approach may be different for highly toxic or bioaccumulative pollutants). In some cases, States have also created categorical exemptions from tier 2 review (e.g., they have exempted entire categories of activities from antidegradation reviews based on a general finding that such activities do not result in significant degradation). States or Tribes that define a high threshold of significance may be unduly restricting the number of proposed activities that are subject to a full antidegradation review. Further the approach currently used by some States may not adequately prevent cumulative water quality degradation on a watershed scale. The current regulation does not specify a significance threshold below which an antidegradation review would not be required. EPA's current thinking is that a clear national norm regarding this ''significance test'' is necessary and should be developed and established in either the regulation or national guidance.

A related issue concerns whether tier 2 should be applied to pollutants where numeric criteria have not been adopted. For example, where there is a proposed discharge of a pollutant to a ''high quality'' segment, and the background concentration of the pollutant is at or near zero in the water body, should significant degradation be evaluated and should it be evaluated any differently where numeric criteria for the pollutant have not been adopted? For example, where a State or Tribe lacks numeric criteria for nutrients such as nitrogen and phosphorus (a common occurrence), increased discharges of these nutrients can be expected to result in changes in plant life or species diversity. If the State or Tribe relies entirely on a pollutant loadings comparison to numeric criteria for the tier 2 evaluation, new loadings of nutrients may not even be evaluated under tier 2.

EPA's sense is that, in practice, the current tier 2 requirements tend to be used to protect high quality waters only where such high quality supports fishing and swimming uses. However, limiting tier 2 protection to assimilative capacity associated with only fishing and swimming uses means that the protection afforded by tier 2 can end up being narrower than intended. For example, where a water has unique ecological significance (e.g., acid bog or thermal spring) not captured by ''fishable/swimmable,'' the State or Tribe may not believe it is appropriate to designate the water as high quality under tier 2. In this case, the unique ecological characteristic would warrant protection as an existing use. The State or Tribe also has the option of designating the water ONRW, yet, as discussed elsewhere in this section, EPA believes that many States and Tribes are not inclined to designate waters ONRW. The result in this example is that a water with unique

ecological significance that may warrant a relatively high level of protection, falls through the crack between tiers 1 and 2 where the State or Tribe interprets the level of protection afforded by those tiers too narrowly.

ii. "Necessary" Lowering of Water Quality. The water quality standards regulation requires that the water quality of high quality waters not be lowered unless the State or Tribe determines that such degradation is necessary to accommodate important social and economic development. Given the variety of available engineering approaches to pollution control and the emerging importance of pollution prevention, the finding of necessity is among the most important and useful aspects of an antidegradation program and potentially an extremely useful tool in the context of watershed planning. An approach that has been recommended by EPA is to require the proponent of the proposed activity to develop an analysis of pollution control/pollution prevention alternatives. In conducting its antidegradation review, the State or Tribe then ensures that all feasible alternatives to allowing the degradation have been adequately evaluated, and that the least degrading reasonable alternative is implemented. Also, note that where less-degrading alternatives are more costly than the pollution controls associated with the proposal, the State or Tribe should determine whether the costs of the less-degrading alternative are reasonable. EPA believes that such an alternatives analysis approach can be an effective tool for maintaining and protecting existing assimilative capacity. EPA's current thinking is that specifying what would constitute an acceptable alternatives analysis in the regulation, could result in the addition of substance and rigor to the "tier 2" antidegradation reviews conducted by States and Tribes.

iii. Identification of "Important" Social or Economic Activities. Another task that must be completed as part of an antidegradation review is to evaluate whether a proposed activity that will result in degradation is necessary to accommodate important social or economic development in the area in which the waters are located. (40 CFR 131.12(a)(2)) The significance of determining if an activity will provide for important social or economic benefit is that, absent important social or economic benefit, degradation under tier 2 must not be allowed. Factors that may be addressed in such an evaluation include: (a) employment (i.e., increasing, maintaining, or avoiding a reduction in employment), (b) increased production, (c) improved community tax base, (d) housing, and (e) correction of an environmental or public health problem. Some States or Tribes have addressed this issue by requiring the applicant to bear the burden of demonstrating the social and economic importance of the proposed activity. However, approaches for evaluating social and economic importance vary widely. EPA published *Interim Economic Guidance for Water Quality Standards: Workbook,* Appendix M to the "Water quality Standards Handbook—Second Edition" in March 1995 (EPA–823–B–95–002, March 1995). This guidance specifically addresses the determination of social and economic importance in the context of a tier 2 antidegradation review and should be useful to States and Tribes in determining the relative economic consequences of various development proposals and their relationship to water quality standards. EPA's current thinking is that determining the social and economic importance of a proposed activity is an important public question best addressed by State, Tribal or local interests, perhaps as part of the development of a basin plan.

iv. Tier 2 and Identification of Waters under CWA Section 303(d). Section 303(d) of the Clean Water Act and EPA regulations require States to develop lists of waters that do not meet State water quality standards, even after point sources of pollution install the minimum required levels of pollution control technology. Section 303(d) lists must be submitted to EPA every two years. The waters on the lists are called water quality-limited waters and are defined in EPA regulations as waters "where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by section 301(b) and 306 of the [Clean Water] Act." 40 CFR 130.2(j). States are then required to develop total maximum daily loads (TMDLs) for water quality-limited waters.

EPA's current policy is that States include waters on section 303(d) lists if applicable water quality standards are not met or are not expected to be met by the next list submission deadline, i.e., within two years (see memorandum from Robert Wayland, Director Office of Wetlands, Oceans and Watersheds, to Water Management Division Directors, Regions I–X, Directors Great Water Body Programs and Water Quality Branch Chiefs, Regions I–X, Subject: National Clarifying Guidance for 1998 State and Territory Section 303(d) Listing Decisions, August 27, 1997). In determining whether to list waters, States should consider all aspects of applicable water quality standards, including narrative and numeric criteria, designated uses, and antidegradation policies.

EPA is currently discussing with stakeholders possible changes and clarifications to the water body listing regulations and guidance under section 303(d) of the Act. Changes and/or clarifications could include a statement in the regulation, or a clarification, that identifies existing tier 2 antidegradation analyses and decisions as "existing and readily available water quality-related data and information" that must be considered under 40 CFR 130.7(b)(5) when deciding whether to place a water body on a section 303(d) list. Information from existing antidegradation tier 2 reviews on assimilative capacity for particular water bodies could be used to determine whether a water body is likely to not meet water quality standards in the near future and thus required to be included on the section 303(d) list. In addition, EPA could amend the existing antidegradation regulations to direct States and Tribes to consider the 303(d) listing status of a water body, and the information supporting that status, when determining whether a proposed activity that is expected to degrade water quality in that water body can be authorized under tier 2 of the State's or Tribe's antidegradation provisions.

v. Achieving all cost-effective and reasonable best management practices for nonpoint sources. This implementation issue arises from one sentence that is included in the federal antidegradation policy at 40 CFR 131.12(a)(2):

> Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

This sentence has been somewhat controversial over the years because it could be interpreted to require a State or Tribe to include, in its water quality standards, a provision requiring adoption of authority for, as well as achievement of, best management practices (BMPs) for nonpoint sources prior to allowing degradation of high quality waters. EPA has interpreted 131.12(a)(2) as not requiring a State or Tribe to establish BMP requirements for nonpoint sources where such BMP requirements do not exist. As EPA clarified in a February 22, 1994 guidance memorandum, State and

Tribal antidegradation rules need only include provisions to assure achievement of BMPs that are required under State or Tribal nonpoint source control laws or regulations. (Memorandum from Tudor T. Davies, Director EPA Office of Science and Technology to EPA Water Management Division Directors, Regions I–X, Subject: Interpretation of Federal Antidegradation Regulatory Requirement, February 22, 1994) Thus, States and Tribes that have adopted nonpoint source controls must assure that such controls are properly implemented before authorization is granted to allow point source degradation of water quality.

EPA's current thinking is that the term "all cost-effective and reasonable best management practices for nonpoint source control" in 40 CFR 131.12(a)(2) would be more effective if read more broadly. In other words, the term could include nonpoint source best management practices established through Federal, State, Tribal, and local authorities and programs that address activities on the land or water that create or exacerbate impacts to surface waters. This construction is consistent with EPA's Total Maximum Daily Load (TMDL) program under Section 303(d) of the Clean Water Act. There, EPA's current policy is that in achieving pollutant load reductions from nonpoint sources, EPA and States should work in partnership, using all available Federal, State, and local authorities and programs. As EPA stated in an August 1997 TMDL guidance memorandum, States are expected to achieve nonpoint source pollutant load reductions through such authorities and programs, including non-regulatory, regulatory, or incentive-based programs. EPA is considering applying the same test to § 131.12(a)(2).

In addition, EPA's current thinking is that it may be time to begin to more actively ensure implementation of this requirement: to implement cost effective and reasonable best management practices for nonpoint source control before allowing lowering of water quality in a water body. One way to do this would be to specify that State and Tribal antidegradation implementation procedures include a step under which States and Tribes inventory their nonpoint source authorities and programs, and, as part of each antidegradation review, include in the record documentation on how those authorities and programs were applied to activities in a watershed in which additional loadings subject to an antidegradation review have been considered. Emphasizing this requirement by specifying it as a required aspect of a State or Tribal antidegradation implementation procedure, in EPA's view, would facilitate use of antidegradation policy as a tool to ensure that nonpoint sources are controlled where possible in accordance with water quality standards, before any additional assimilative capacity in a water body can be allocated to an activity. EPA is interested in comment on this current thinking and specifically on whether it would be helpful to revise the regulation to clarify the relationship between nonpoint source controls and tier 2 antidegradation requirements.

In summary, numerous stakeholders have commented to EPA that antidegradation reviews are conducted inconsistently across the country and that EPA should attempt to improve the national consistency of such reviews. EPA is interested in comment on the appropriate balance between national consistency and State and Tribal flexibility in the implementation of the tier 2 provision and on what changes may be needed to the regulation or EPA policy or guidance to ensure that the tier 2 provision is implemented in a nationally consistent manner that is consistent with the intent of the antidegradation provision, and whether a consistent approach should be the goal of States' and Tribes' watershed programs.

Request for Comments on Antidegradation Tier 2

EPA requests comment on the following questions:

1. Does the existing requirement to apply tier 2 "where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water" while at the same time "protecting existing uses fully" need to be clarified with respect to which waters are afforded tier 2 antidegradation protection, and if so, should the Agency clarify the requirement with additional guidance, or with revisions to the regulation?

2. What factors should be considered in identifying "high quality" waters? Should the decision be based strictly on chemical water column quality (i.e., a pollutant-by-pollutant approach), or should a segment's overall quality or other factors be considered (i.e., a water body-by-water body approach)?

3. Given EPA's current thinking that both approaches may be acceptable and neither is necessarily superior, are the two approaches compatible and could they be implemented together?

4. Should application of tier 2 be clarified so that protection of assimilative capacity associated with non-fishable/swimmable uses is clearly required?

5. What methods are currently being used by States and Tribes to define "significant degradation"?

6. How should "significant degradation" be defined? Is there a need for a nationally consistent approach? Should EPA issue additional guidance, or revise the regulation to include, for purposes of implementing tier 2 requirements, a definition of significant degradation? Are categorical exemptions appropriate, and if so, under what circumstances?

7. How should cumulative effects in a watershed be considered in assessing the significance of the degradation that will occur as a result of a proposed activity?

8. How should the "necessity" of degradation be determined? When should the costs of less degrading alternatives be considered reasonable?

9. How should significant degradation be evaluated for pollutants where no numeric criterion has been adopted?

10. Is additional Agency guidance or regulatory requirements necessary to help States and Tribes address social and economic importance (e.g., additional methods or options beyond those discussed in the March 1995 Interim Economic Guidance document)?

11. Should evaluating the importance of proposed discharges be entirely a State or Tribal determination and not be a required element for EPA review?

12. Would it be appropriate to revise the regulation to clarify the relationship between nonpoint source controls and tier 2 antidegradation requirements?

13. Should EPA revise the regulation to expressly state that States and Tribes are to consider the 303(d) listing status of a water body, and the information supporting that status, when determining whether a proposed activity that is expected to degrade water quality in that water body can be authorized under tier 2 of the State's or Tribe's antidegradation provisions?

14. Is greater consistency between individual State and Tribal programs desirable and, if so, what changes may be needed to the regulation or EPA guidance to ensure that the tier 2 provision is implemented in a nationally consistent manner?

5. 40 CFR 131.12 (a)(3) "Tier 3"

Tier 3 of the antidegradation policy is intended to identify and protect waters of extraordinary ecological, recreational or other significance. Tier 3 of the antidegradation policy incorporates the

concept of Outstanding National Resource Waters (ONRW). The rationale for this provision is that some water bodies are of such high quality or of such exceptional ecological significance that the commonly applied designated uses such as warm water fishery and primary contact recreation and criteria to protect those uses are not suitable or may not provide adequate protection to maintain the high water quality or ecological significance in a given water body.

ONRWs are intended to include the highest quality waters of the United States. Additionally, the ONRW antidegradation classification offers special protection for waters of ''exceptional ecological significance,'' i.e., those water bodies which are important, unique, or sensitive ecologically, but whose water quality, as measured by the traditional characteristics such as dissolved oxygen or pH, may not be particularly high, such as thermal springs. Waters of exceptional ecological significance also include waters whose characteristics cannot adequately be described by traditional parameters (such as wetlands and estuaries).

Tier 3 of the antidegradation policy provides the highest level of protection to water bodies by prohibiting the lowering of water quality. The only exception to this prohibition as discussed in the preamble to the water quality standards regulation is for activities that result in short-term and temporary changes in the water quality of the ONRW. EPA guidance has not defined temporary and short-term specifically, but views these terms as limiting water quality degradation for weeks or months, not years. The intent is to limit degradation to the shortest possible time.

a. Designating ONRWs. The designation of water bodies as ONRWs has been limited in its application. Overall, there are relatively few water bodies designated as ONRWs in the United States, although some States have designated a high percentage of State waters as ONRWs. Several States have been reluctant to adopt ONRWs because of concerns regarding the process for adopting ONRW classifications and the level of protection afforded to a water once it is classified as an ONRW.

Regarding the process for adoption of ONRWs, the existing regulation requires the State or Tribe to provide an ONRW level of protection in their antidegradation policies, but there is no requirement that any water body be so designated or any specificity as to how that is to be done. One way to address this issue may be for EPA to amend the regulation to require States and Tribes to establish a nomination process with criteria guidelines in which the public could petition the State or Tribe for designation of certain waters as ONRWs. It would then be up to the State or Tribe to set criteria for the ONRW selection process with the final decision made by the State or Tribe after consideration of the public comment. EPA currently recommends three categories of waters which could be eligible for ONRW designation: waters of (1) National and State parks, (2) wildlife refuges, and (3) exceptional recreational or ecological significance.

Regarding the level of protection that is afforded to a water body once it is classified as an ONRW, a common concern is that classifying a water as ONRW will result in a federal prohibition on any further development of any kind in the watershed. As described above, the federal antidegradation policy regarding ONRWs is that once classified as an ONRW, the water quality of the ONRW must be maintained and protected. One way, but perhaps not the only way, to ensure that the water quality is maintained and protected would be to prohibit activities that would generate additional pollutant loads and or water quality impacts in the ONRW. This approach is commonly referred to as ''no new or increased discharge'' and was explained by EPA in its promulgation of antidegradation provisions for the State of Pennsylvania in 1996 (61 FR 64816, December 9, 1996). As discussed in the Pennsylvania rule, the federal policy requiring the water quality to be maintained and protected is subject to some interpretation by States and Tribes.

EPA believes there is considerable uncertainty from jurisdiction to jurisdiction concerning the impact of the ONRW classification on the local community or the State or Tribe. How will the State or Tribe handle future needs for development in the area of the ONRW? What role does EPA play in ensuring that the State or Tribe provides the highest protection measures to ONRWs? EPA's current thinking is that this ''no further development in the watershed prohibition'' may be an overly strict interpretation of the protection required by tier 3 and that a public debate is necessary to clarify the level or range of protection that is afforded to a water by classifying it as an ONRW, and how that level or range should be determined.

One way to remove uncertainty surrounding the implications of ONRW designations is for States and Tribes to adopt concurrent with the ONRW the implementation methods for that water body that define what attributes of the water will be protected and how this will be accomplished by both point and nonpoint sources. It may make sense for the regulation to include this requirement in order for all parties concerned to know the impact on development of such a designation before adopting an ONRW.

i. Relationship of Tier 3 to the Wild and Scenic Rivers Act. Additionally some States have not adopted waters as ONRWs when there has been concern regarding ONRW requirements and the requirements of a wild, scenic, or recreational water body. Although the Department of Interior (DoI) founded the antidegradation policy from which the concept of an outstanding national resource water (ONRW) that EPA currently uses evolved, an ONRW is different from the Wild and Scenic Rivers program administered by DoI. ONRWs are designated by the State or Tribe in their water quality standards. Wild and scenic rivers are given their designation by Congress or the Department of Interior pursuant to the Federal Wild and Scenic Rivers Act. The main purpose of the Wild and Scenic Rivers Act is to keep waters free-flowing. The main purpose of an ONRW designation is to maintain and protect high quality waters that constitute outstanding resources due, for example, to their exceptional recreational or ecological significance, which can include free-flowing water. EPA does not see any conflict between these two programs.

b. Tier 3 Implementation. EPA in chapter 4 of the Water Quality Standards Handbook interprets the ''water quality to be maintained and protected'' provision of the regulation as requiring no new or increased discharges to ONRWs and no new or increased discharge to tributaries to ONRWs that would result in lower water quality in the ONRWs. The only exception is for short-term and temporary changes. In contrast, some States, Tribes, and EPA Regions have interpreted this provision to allow new discharges as long as the water quality is either maintained or improved. Alternatively, some States, Tribes and Regions have interpreted water quality in terms of the characteristics for which the water body was selected to be an ONRW and have strictly maintained those characteristics while allowing other characteristics to become degraded. EPA has also allowed a proposed activity that will result in a new or expanded source where the applicant agrees to implement or

finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects of the proposed activity. This offset is generally called trading and is accomplished through a TMDL pursuant to CWA Section 303(d) requirements. Such TMDLs include an appropriate margin of safety and address, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources.

This variability in interpretation has created ONRWs across the Nation that vary in terms of the stringency of point source controls, and types of water bodies considered to be ONRWs. Restrictions on physical changes have also been implemented in an inconsistent manner. EPA is considering whether the existing ONRW protection program is addressing an appropriate universe of waters and whether the flexibility provided under the regulation, in terms of coverage and protection requirements, needs to be further restricted, maintained, or expanded. It may make sense to have an ONRW designation which is permanent and allows no change in water quality and applicable to few waters while creating a subset of waters which can have some change in water quality under certain circumstances.

c. Tier 2½. Several States and Tribes have already created, as part of their antidegradation policy, a provision that is in between EPA's recommended tier 2—high quality waters and tier 3—Outstanding National Resource Waters, sometimes referred to as Tier 2½. This additional tier is given various names, such as Outstanding State Resource Waters, Outstanding Tribal Waters, Special Protection Waters, or Water of Exceptional Significance. When it supplements tier 2 and tier 3 provisions, EPA has accepted this provision as being consistent with the intent and spirit of the antidegradation policy. Inclusion of a tier 2½ within the regulation would encourage States and Tribes to apply more stringent controls than would be required under tier 2 but with more flexibility to make adjustments in criteria and permitting decisions than would normally be allowed if the water body in question were designated as an ONRW. Any additional flexibility that might be created by a tier 2½ classification to allow additional activities that could marginally affect water quality, might not be necessary where a State or Tribe (or EPA) considers such flexibility to already exist in the context of the ONRW classification. In commenting on the flexibility afforded by the tier 2½ classification, commenters are urged to state their understanding of the flexibility currently afforded in the ONRW classification.

Request for Comments on Antidegradation Tier 3

EPA seeks comment on the following questions:

1. Should EPA add definitions of important terms to the ONRW part of the regulation, including a definition of "degradation" which clarifies that temporary or short-term effects on ONRW waters could be authorized? Should definitions of "short-term" and "significant" also be included?

2. Should EPA require States and authorized Tribes to establish both a process and qualification criteria which would allow the public to nominate waters for the ONRW designation? Would EPA guidance be helpful?

3. Should the tier 2½ antidegradation policy concept be explicitly recognized in the federal regulation and what, if any, limits or factors for application of the tier should be included?

4. States (and Tribes) have differing interpretations of the level of protection afforded ONRWs. Should EPA further specify in the regulation what maintaining and protecting water quality in ONRWs means?

6. 40 CFR 131.12 (a)(4) "Thermal Discharges"

The requirement to prevent potential water quality impairment associated with thermal discharges contained in § 131.12 (a)(4) of the regulation is intended to coordinate the requirements and procedures of the antidegradation policy with those established in the CWA for setting thermal discharge limitations. Regulations implementing section 316 may be found at 40 CFR 124.66. The statutory scheme and legislative history indicate that limitations developed under section 316 take precedence over other requirements of the CWA. EPA is not requesting comment on this section of the regulation. This provision is mentioned here only in the interest of completeness.

E. Mixing Zones

1. Background

The current regulation (at 40 CFR 131.13) describes States' and Tribes' discretionary authority to include, in their water quality standards, policies that affect the implementation of those standards. For example, States and Tribes may adopt policies on mixing zones, variances, and schedules of compliance for water quality-based NPDES permit limits. If included in their water quality standards or other implementing regulations, States and Tribes are required to submit such policies to EPA for review and approval. The policies governing the implementation of water quality standards are inseparable from the standards themselves and, consequently, EPA reviews both to determine whether implementation policies are compatible with the State or Tribal water quality standards provisions, technically well founded and consistent with the CWA.

Concerns have been expressed both by the regulated community and environmental groups over the lack of specificity in State and Tribal mixing zone policies and implementation procedures adopted under this general policies provision. These groups believe that this lack of specificity may result in rather subjective and inconsistent implementation of water quality standards, from site-to-site. EPA has also, through its ten regional offices, not always applied uniform standards in reviewing individual States' and Tribes' mixing zone provisions.

In encouraging the implementation of water quality management activities consistent with a broader watershed approach, EPA has encountered inconsistent implementation of mixing zone provisions across State and Tribal borders, within whole watersheds, and sometimes along a single water body. Remedies to water quality problems designed along watershed boundaries can be limited in their effectiveness as a result of differing policies, procedures and treatment of the same water body by different authorities. A certain amount of flexibility is, however, essential when dealing with complex water quality problems on a watershed or basin scale. EPA's current thinking is that it is preferable to be more explicit about where the program requires consistency and where flexibility is allowed or encouraged.

The current regulation does not articulate any EPA requirements regarding the content of mixing zone implementation procedures. Rather, EPA guidance addressing mixing zones, and stream design flows is contained in several documents, including the *Water Quality Standards Handbook: Second Edition* (the Handbook) and the *Technical Support Document for Water Quality-based Toxics Control, March, 1991* (the TSD). Although program and technical guidance identifies the approaches to standards implementation which EPA recommends and considers protective of water quality, guidance is not equally effective at delineating what constitutes

minimally acceptable content or the approaches EPA considers to be not approvable or inconsistent with the CWA. Further, most regulatory agencies, as well as the regulated community, are most concerned with what is required rather than what is recommended. Policy or guidance is not binding whereas regulation is. Guidance is better designed to provide detailed descriptions of the variety of technically sound implementation approaches and their underlying scientific basis; regulation provides the clearest direction regarding required minimal program content and identification of those components of the program where flexibility is allowed.

EPA is considering an expansion of the section of the regulation addressing general policies to provide clear, detailed and specific direction to States and Tribes on the development and content of mixing zone policies and implementation procedures. EPA's current thinking is that greater specificity within this portion of the regulation may be needed to clarify the minimum necessary elements of State and Tribal mixing zone policy and implementation procedures. EPA's current thinking is that this area of the regulation needs to articulate a clear level of national consistency in mixing zone implementation that results in a consistent level of protection across the country and at the same time, where State and Tribal flexibility is not only encouraged, but possibly essential to program efficiency and accuracy.

2. EPA Policy and Guidance on Mixing Zones

The concept of mixing zones as a regulatory tool to address the incomplete mixing of wastewater discharges in receiving waters has been embraced by both EPA and its predecessor agencies as part of a larger regulatory effort to ensure that point source discharges of wastes do not impair beneficial uses. EPA interprets the CWA as allowing the use of mixing zones as long as the provisions addressing toxicity at section 101(a)(3) are met and the designated uses of the water body as a whole are protected. One court has considered the application of a mixing zone in a discharge permit and upheld EPA's use of a limited mixing zone (*See Hercules* v. *EPA*, 598 F.2d 91 (D.C. Cir. 1978)). The concept of a mixing zone is covered by a series of guidance documents issued by EPA and its predecessor agencies (see, for example: *Water Quality Criteria* (Green Book), Federal Water Pollution Control Administration, 1968, pp. 29–31; *Water Quality Criteria 1972* (Blue Book), EPA, March 1973, pp. 112–115, 231–232, 403–457; *Guidelines for Developing or Revising Water Quality Standards,* January 1973; *Chapter 5—Guidelines for State and Areawide Water Quality Management Program Development,* November, 1976; *Allocated Impact Zones for Areas of Non-Compliance,* EPA Region 1, October 1986; *The Water Quality Standards Handbook,* August, 1994, pp.5–1 to 5–11; *Technical Support Document for Water Quality-based Toxics Control* (TSD), March, 1991, pp. 31–34, 56–60, 69–89).

Many definitions of mixing zones have been offered, differing primarily by perspective (i.e., engineering, hydrological, ecological, regulatory) and their application. From a hydrological/engineering perspective, mixing zones can be defined based upon the recognition of incomplete mixing of an effluent with its receiving water (e.g., "that area or volume of dilution water necessary to reduce contaminant concentrations to some acceptable level or to a totally mixed condition"). Biologically, mixing zones can be defined based on the premise that surface water quality criteria can be exceeded under limited circumstances without causing unacceptable toxicity or, more broadly, impairment of the designated beneficial uses (e.g., "the area contiguous to a discharge where receiving water quality is not required to meet water quality criteria nor other requirements applicable to the receiving water").

EPA's policy on the use of mixing zones has evolved since its early recognition within general water quality guidance, primarily in association with the institution and evolution of the NPDES permit program (e.g., the TSD). Initially, guidance emphasized the need to ensure that the biological integrity of the aquatic community in the receiving stream was protected and that such determinations must be based on site-specific evaluations. In the late 1980's EPA and authorized NPDES States began increasing the development and issuance of water quality-based effluent limits. With this increase, came a demand for widely applicable national guidance to support those programs. EPA and States, in essence, needed wasteload allocation and water quality-based permit limit derivation methods that were relatively simple to use and could be implemented with little site-specific data. EPA met this demand by issuing revised guidance (the TSD and Handbook, cited above, are examples) and by accepting a wide range of State mixing zone practices. As a result, mixing zone provisions have become less prescriptive than earlier guidance that envisioned data rich, site-specific studies, and more reliant on often cursory evaluations, general mixing assumptions, and best professional judgement.

EPA's current policy addresses mixing zones as allocated impact zones (AIZs) where certain numeric water quality criteria may be exceeded as long as: there is no lethality to organisms passing through the mixing zone, there are no significant risks to human health, and the designated and existing uses of the water body are not impaired as a result. These AIZs or mixing zones, if disproportionately large, could unacceptably impact the integrity of the aquatic ecosystem and have unanticipated ecological consequences on the water body as a whole resulting in impairment of the designated or existing uses. Therefore, EPA's policy has emphasized a holistic approach to mixing zone regulation which considers location, size, shape, outfall design and in-zone quality. Mixing zone guidance produced by EPA since 1972 has consistently emphasized the need to protect both nonmotile benthic and sessile organisms in the mixing zone as well as swimming and drifting organisms (Water Quality Criteria 1972). States and Tribes, however, have focused primarily, if not exclusively, on the protection of swimming and drifting organisms and the need to provide "zones of passage" within waters with mixing zones. In its dependence upon conditions protective of swimming and drifting organisms to define mixing zones, this approach results in an incomplete implementation of the original concept supporting mixing zones. As originally designed, EPA's mixing zone policy provided for the prevention of lethality to swimming and drifting organisms by limiting the size of the mixing zone and to nonmotile organisms by limiting the placement or location of mixing zones.

Although existing EPA guidance on the implementation of mixing zones (cited above) is quite detailed, at present, the regulation itself simply provides that States and Tribes may adopt, as part of their water quality standards, mixing zone policies and that such policies are subject to EPA review and approval (40 CFR 131.13). In addition, EPA may separately review individual State and, once approved to administer NPDES, Tribal mixing zone determinations as part of the wasteload allocation and NPDES permit review process, outside the standards adoption and review process to ensure appropriate implementation of the State's mixing zone policy.

EPA is considering expanding the current provisions at 40 CFR 131.13 addressing State and Tribal development of mixing zone policies within their water quality standards program to address the content and design of those policies.

3. State and Tribal Mixing Zone Policies

While there are advantages to the more flexible general approach adopted in the late 1980's, the generality of the current regulation has led to some uncertainty as to what constitutes an approvable mixing zone policy. Because the regulation lacks detailed requirements concerning EPA's standards of review of State and Tribal mixing zone provisions, EPA is considering changing the language regarding State and Tribal adoption of mixing zone policies to address specifically the content of such policies. EPA's current thinking is that greater specificity would provide for increased public participation in State, Tribal and Federal decision-making; a clearer understanding by the State, Tribe and public of what EPA considers an approvable mixing zone policy; a reduction in the number of NPDES permit appeals and objections based on differing interpretations of a State or Tribal mixing zone policy; and a more consistent review of State and Tribal submissions by EPA itself.

Fundamental to any such policy, EPA is considering requiring States and Tribes to indicate explicitly in their water quality standards whether or not they allow mixing zones for each of the various uses designated for a given water body. Such provisions could address mixing zones applied to either acute or chronic aquatic life and other water quality criteria (e.g., public water supply, livestock watering, wildlife protection, etc.). Under this approach, if the State or Tribe does not explicitly authorize mixing zones, then no mixing zones would be allowed in State or Tribal waters, and all applicable criteria would have to be met at the end-of-pipe. (Memorandum from Robert Perciasepe, Assistant Administrator for Water to Water Program Directors, Regions I-X, Subject: EPA Guidance on Application of State Mixing Zone Policies in EPA-Issued NPDES Permits, August 6, 1996). Alternatively, States and Tribes could determine that such prohibitions would be applied to only a subset of uses or pollutants rather than across all use categories and pollutants. Some States or Tribes have used this approach to prohibit mixing zones in their highest use classes (e.g., class AA), while allowing mixing zones in more highly impacted watersheds (e.g., class C or D waters).

States and Tribes could also be required to specify the conditions under which mixing zones are allowed in each site-specific application and the limitations to those applications (e.g., size, shape, length, placement, etc.). In addition, States and Tribes could be required to identify any circumstances, pollutants, locations or conditions for which the use of mixing zones is prohibited. States and Tribes could specify circumstances where only chronic mixing zones would be allowed (i.e., no acute mixing zone or zone-of-initial dilution) and circumstances where acute and/or chronic mixing zones would be prohibited. Current EPA guidance, for example, recommends States and Tribes consider prohibition of mixing zones when bioaccumulative pollutants are present in the discharge or where an effluent is known to attract biota. Other circumstances where mixing zone prohibitions or location restrictions might be appropriate include areas used by aquatic life for breeding or feeding, locations of shellfish beds, locations of critical habitat for threatened and endangered species, across tributary mouths, shallows, near shore areas and in areas of critical habitat.

This change would clarify in the regulation the State and Tribal general authority to provide mixing zones, the scope of that authority, and the site-specific factors evaluated by States and Tribes when deciding whether a mixing zone is authorized in each individual case. EPA is considering making this potential clarification to the regulation, its implications, and how mixing zone policies can be designed to better support and foster a watershed management framework.

4. Mixing Zone Requirements

Some States and Tribes that have adopted mixing zone provisions within their water quality standards have not specified mixing zone requirements (e.g., water quality within mixing zones, the allowable size of mixing zones, etc.) under their mixing zone policies. EPA is therefore considering including as regulatory requirements certain specifications derived from EPA's guidance on mixing zones. Regarding policy content, EPA might revise the regulation to require that State and Tribal mixing zone policies address a minimum number of elements. Those required elements might include provisions that: identify conditions and circumstances (e.g., particular locations) when mixing zones are not permitted; identify any pollutants or classes of pollutants for which mixing zones are prohibited; identify the mechanisms to be used to ensure that mixing zones do not impinge on ecologically or recreationally sensitive areas; identify the mechanisms to be used to determine complete and incomplete mixing of effluent and receiving water; identify conditions when a mixing analysis is required; identify default design flows for implementing criteria; identify maximum allowable mixing zone size and configuration, as well as how mixing zones dimensions are determined; specify what water quality conditions must be met within mixing zones; state whether zones of initial dilution are allowed; and state whether there are special conditions established for bioaccumulative pollutants.

Identification in the regulation of minimum elements of State or Tribal mixing zones procedures would establish the basis for EPA review and approval of State and Tribal mixing zone provisions. It would also facilitate the review of individual mixing zone determinations made under the wasteload allocation/permit approval process by EPA, other agencies and the public. This would not significantly change EPA's guidance or current approach to mixing zone policies. Rather, it would clarify and codify the basis by which EPA will review and approve or disapprove State and Tribal mixing zone policies and their site-specific implementation through NPDES permits.

As discussed previously, EPA's mixing zone guidance is premised fundamentally on the prevention of lethality within the mixing zone and siting such that areas of critical habitat are avoided, resulting in the protection of designated uses. One aspect of this guidance is that, for aquatic life uses, water quality within the mixing zone should be such that, at a specified concentration of a contaminant (i.e., magnitude), any "swimming or drifting" organism would not remain in the mixing zone long enough to receive an exposure that is sufficiently long (i.e., duration) to cause lethality. If the combination of the concentration of a given pollutant or the combined effect of multiple pollutants (e.g., whole effluent toxicity) in a discharge and the duration of exposure to that concentration are low enough, there is no lethality within the mixing zone, and the criteria (magnitude and duration components together) are met.

This approach, however, only provides protection in situations in which water column organisms pass in and out of the mixing zone. This interpretation does not adequately

protect stationary or sessile organisms within the mixing zone; organisms that remain within the mixing zone for extended periods because the mixing zone extends into feeding or breeding areas or critical habitat (e.g., tributary mouths, shallows, shoreline habitat in large, fast-flowing rivers); critical habitat areas for endangered or threatened species; or instances where mixing zone conditions attract organisms. EPA's mixing zone policy and guidance address those instances where the provisions protecting swimming and drifting organisms are not adequate to protect nonmotile benthic and sessile organisms or critical habitat areas by limiting the location, size and shape of mixing zones. In some instances, this policy has been implemented in a fragmented manner. In such instances, these latter restrictions to mixing zone placement are inadequately addressed. EPA always has discretion to object to, and take over if necessary, permits that provide site-specific mixing zones in cases where such mixing zones would fail to protect all aspects of designated uses. However, oversight of individual permits is not an efficient approach to resolving program-level issues. To clarify the meaning of its policy and ensure a more complete implementation of protective mixing zone provisions, EPA is considering changes to the regulation.

EPA could require that State and Tribal mixing zone policies specifically identify prohibitions (where appropriate) or limit mixing zones where necessary to protect existing or designated uses. Some States and Tribes already include prohibitions against the use of mixing zones where they could intrude upon public drinking water supply intakes or public swimming beaches, or where mixing zones prove to be attractive to aquatic life or wildlife (e.g., water temperature). EPA might require that State and Tribal mixing zone provisions specifically address instances such as these where restrictions on mixing zones are appropriate. Additionally, EPA is considering requiring that State and Tribal water quality standards include a description of the State's or Tribe's methodology for specifying the location, geographic boundaries, size, shape and in-zone quality of mixing zones.

EPA could also clarify its current policy that an approvable mixing zone methodology must be scientifically defensible and ensure the protection of designated uses in the water body as a whole. This would require that the methodology, at a minimum, be sufficiently precise to support consistent regulatory actions (e.g., an NPDES permit). EPA is considering this change to ensure that State and Tribal mixing zones do not adversely affect the integrity of State and Tribal waters and to address inconsistent allocation of mixing zones from site-to-site. Under this approach, for example, when a State or Tribe assumes that either complete or incomplete mixing occurs, the State's or Tribe's implementation procedure could require the analyses supporting the mix assumption to be documented in the record (e.g., permit fact sheet). EPA is considering the need for additional language in the water quality standards regulation to clarify the essential elements of State or Tribal mixing zone provisions and, alternatively, whether such language would be better established in guidance. EPA's current thinking is that a certain amount of professional judgement is necessary in making site-specific mixing zone determinations and that clarifications to the regulation regarding the minimum mixing zone policies and implementation procedures should not preclude such flexibility. However, the policy and implementation procedures should be clarified so that the guidelines and framework for making site-specific mixing zone determinations are clear to everyone.

5. Mixing Analyses

The above discussion focuses on establishing State and Tribal mixing zone policies and procedures. The following discussion addresses the application of such procedures in individual permitting decisions.

Where point source discharges mix in a slow or "incomplete" manner with receiving waters and the State or Tribe has authority to provide a mixing zone, EPA guidance recommends that a mixing zone analysis be incorporated into the derivation of water quality-based effluent limits (WQBELs) in NPDES permits. The mixing zone analysis should demonstrate compliance with State or Tribal mixing zone requirements (e.g., size, shape, location and in-zone quality) that are included in the water quality standards. Providing a mixing zone in incomplete-mix situations acknowledges the mixing behavior of the discharge and limits excursions above criteria to a specified zone. Where a discharge mixes with the receiving water in a rapid and "complete" manner, by definition a mixing zone analysis is not needed and an evaluation of the assimilative capacity of the receiving water and a dilution allowance based on stream design flow conditions specified in the State or Tribal water quality standards is often incorporated into the derivation of WQBELs.

Presently, all State-issued NPDES permits are reviewable by EPA. EPA may object to individual permits and assume authority to issue such permits. When EPA is the permit issuing authority, it must follow the applicable State or Tribal water quality standards and ensure that any water quality-based effluent limits in the permit are derived from and comply with the applicable State or Tribal water quality requirements. A permit that does not include a defensible mixing zone analysis might not fully protect downstream designated uses. A common example is where a discharge mixes slowly (i.e., incomplete mixing is occurring), but the permit limit is based on an assumption that the entire design flow of the stream rapidly and completely dilutes the effluent. When this does not occur and not all of the dilution water mixes rapidly with the effluent discharge, the result may be a lengthy downstream plume (i.e., mixture of effluent and surface water) with water quality characteristics that exceed applicable chemical-specific or toxicity criteria, are potentially lethal to aquatic life, and may impair the designated use. Such plumes are of concern because:

(1) Chemical-specific criteria, ambient toxicity criteria or other narrative criteria may not be achieved in the extended plume;

(2) Effluent plumes can extend far downstream, causing impact beyond the limited area of a mixing zone and resulting in use impairment;

(3) There may be intakes for public drinking water systems located downstream, but within reach of an extended plume;

(4) Effluent plumes may be located along the shore in shallow waters that are critical nursery areas for sensitive species and which constitute important or critical habitat, particularly in large, channelized rivers;

(5) Aquatic life might be attracted to the plume because of its temperature differential or other characteristics;

(6) Threatened or endangered species may reside within or near the plume area, and

(7) Additional dischargers may be located downstream and the cumulative effects of all discharges may not be adequately considered, particularly regarding unintended overlapping plumes.

EPA believes the rate of ambient mixing and the complete versus incomplete mix decision is a critical but frequently overlooked component of water quality-based permitting.

Although a mixing zone analyses requires site-specific information and additional resources, EPA believes that the approach currently followed by some States and Tribes might be too simplistic, might allow lethality within areas of critical habitat or ecological importance and may not fully protect designated uses. EPA's current thinking is that the regulation should be made more explicit as to the circumstances under which mixing zones must be supported by site-specific data and analysis. EPA is considering the need for specific requirements within the regulation governing the development and content of mixing zone analysis procedures as part of State and Tribal implementation procedures.

6. Narrative Criteria for Mixing Zones

Historically, States have relied on narrative criteria as a means to provide baseline protection for water quality, to address toxicity from combinations of pollutants or unknown pollutants through whole effluent toxicity testing and limits, and to control pollutants for which there are no chemical-specific criteria available. EPA has consistently maintained that prevention of nuisance conditions (e.g., materials that will settle to form objectionable deposits, floating debris, oil, scum, foam and other matter, toxic conditions, etc.), through the application of narrative criteria, apply to all waters, at all times, including mixing zones. Despite this long-standing policy, EPA is unaware if, in practice, States and Tribes have had any difficulty ensuring the maintenance of these narrative criteria within mixing zones. EPA is interested in comment which might identify any instances where the application of narrative criteria has created difficulties for States and Tribes implementing these provisions in mixing zones.

In addition, EPA has traditionally interpreted these narrative "free froms" as including a prohibition against lethality in all waters, including within mixing zones. However, lethality is a non-conservative endpoint for measuring toxicity. Section 101(a)(3) of the CWA establishes a goal of prohibiting "the discharge of toxic pollutants in toxic amounts" which could be interpreted as applying to chronic as well as acute toxicity. EPA guidance on appropriate water quality within mixing zones also recommends that "the total time-toxicity exposure history must not cause deleterious effects in exposed populations of important species, including post-exposure effects" (EPA, 1973). EPA is considering how such an interpretation (i.e., applying chronic toxicity endpoints to water quality within a mixing zone) could be implemented in the context of the application of narrative criteria within a mixing zone.

Guidance developed by EPA in 1985 (TSD) established a rationale for allowing zones-of-initial-dilution (ZIDs) or acute mixing zones. That guidance limited the use of ZIDs to extremely small areas of the receiving water under limited conditions and to discharges using rapid diffusers which produce effluent discharge velocities exceeding 10 feet per second. That guidance was premised on the rationale that organisms would be *physically* precluded from maintaining a position within the ZID, thus preventing lethal exposures. Benthic and sessile organisms were also protected where ZID placement was controlled and directed away from such critical areas (e.g., near shore, shallows, etc.). In addition, EPA reasoned, high rate diffusers achieve compliance with both acute and chronic criteria within a smaller area, utilizing less receiving water volume for dilution than other discharge designs. Consequently, high rate diffusers are believed to provide greater protection of water quality by their rapid dispersion of effluent within a smaller volume of surface water. Where acute criteria are not applied at the end-of-pipe, current EPA guidance provides for a number of alternative means of protecting against lethality in a mixing zone, even in situations that do not rely on high rate diffusers. Alternatives to requiring compliance with acute criteria at the end-of-pipe or employing a high-rate diffuser to ensure compliance "within a very short distance from the outfall" require a significant amount of site-specific data. Such site-specific data could be requested of NPDES permit applicants. It is EPA's experience that the collection of this kind of data does not occur on a routine basis. EPA is interested in public comment on the relationship between ZIDs or acute mixing zones and narrative criteria prohibitions against lethality and States' and Tribes' experiences with the application of acute mixing zones under varying site-specific and discharge-specific conditions. EPA is also interested in comments on whether the water quality benefits of using high rate diffusers justify potentially detrimental effects on stream bed or shore line habitat.

7. Mixing Zones for Bioaccumulative Pollutants

States and Tribes should exercise caution when evaluating whether a mixing zone is appropriate in cases where bioaccumulative pollutants are present. The impacts of bioaccumulative compounds may extend beyond the boundaries of a given mixing zone with resulting impairment of a water body's designated uses, particularly where stationary species (e.g. shellfish) are present, where uncertainties exist regarding the assimilative capacity of a water body or where bioaccumulation in the food chain is known to be a problem. Sediment contamination has also become a major concern in both flowing and non-flowing water bodies. Concerns about sediment contamination require additional attention since typical mixing zone evaluations focus only on water column toxicity. The effects of persistent and bioaccumulative pollutants may not be detected for some distance from the point of discharge, well outside the mixing zone, or possibly not in the water column at all. Some members of the public have expressed concern regarding the use of mixing zones in situations where bioaccumulative pollutants are present in a discharge and have urged EPA to develop specific regulatory requirements prohibiting the use of mixing zones where these pollutants are present.

Mixing zone policies are developed to address complete and incomplete mixing conditions associated with point source discharges. These policies identify whether mixing zones are allowed and define how a State or Tribe will limit the amount of surface water allocated to mixing under a variety of circumstances. These circumstances include considerations specific to the effluent and pollutants discharged (e.g., toxicity, solubility) and to the water body receiving the waste (e.g., shallow, flowing or non-flowing, high flow or low flow, critical habitat). The potential for bioaccumulation problems can depend on a number of site-specific factors and the use of mixing zones for bioaccumulative pollutants may be best dealt with on a site- or basin-specific basis. EPA's mixing zone guidance emphasizes that the determination by a State or Tribe that a mixing zone is appropriate must be preceded by a separate determination that there is available assimilative capacity in the receiving water. Localized water quality concerns are to be balanced with the larger scale issue of overall pollutant loading to the entire water body or segment. Perhaps concerns about the fate and transport of bioaccumulative pollutants are more effectively addressed under total maximum daily load (TMDL) development and determinations of assimilative capacity which incorporate information on water

column, sediment and tissue contamination. EPA is considering the appropriateness of using mixing zones when controlling for bioaccumulative pollutants.

As discussed in more detail in Section C of this Notice, EPA has recently developed methodologies for deriving sediment quality criteria for non-ionic organics and metals and has proposed sediment quality criteria for five organics. In addition, EPA is working on implementation procedures or a ''user's guide'' for these sediment criteria which will address risk management decisions such as the application of mixing zones.

The regulatory impact of special restrictions on mixing zones for a particular family of pollutants is largely determined by how that family of pollutants is defined within the regulation. The issue of definition of bioaccumulative pollutants is also addressed in the discussion of water quality criteria in Section C of this notice.

In its Great Lakes Guidance, EPA established a twelve year phase out of mixing zones for existing discharges of bioaccumulative chemicals of concern (BCCs) in the Great Lakes Basin and a ban on such mixing zones for new discharges (effective March 1997). The Great Lakes Guidance also allowed States and Tribes to establish limited exceptions to the mixing zone phase-out for existing discharges based on water conservation or economic and technical considerations. The general prohibition on mixing zones for BCCs was established largely because of the persistent and toxic nature of even minute amounts of BCCs in the environment; an effect amplified in the Great Lakes by the tendency of the Lakes to act as ''sinks'' for pollutants discharged to the Great Lakes Basin. In addition, there are documented problems with effects of BCCs in Great Lakes waters (e.g., contamination of Great Lakes salmonid sport fisheries with PCBs and Basin-wide mercury contamination). The Great Lakes Guidance provision phasing out mixing zones for BCCs reflected the Agency's thinking that, in general, mixing zone allowances for BCCs are not appropriate.

On June 6, 1997, the United States Court of Appeals for the District of Columbia Circuit issued its decision in *American Iron and Steel Institute, et al.* v. *EPA, 115 F.3d 979 (D.C. Cir. 1997).* The Court's decision upheld the Great Lakes Guidance on all but three issues. One of these three issues was the phase out of on mixing zones for BCCs. Specifically, the Court vacated the final Guidance insofar as it would eliminate mixing zones for bioaccumulative chemicals of concern (BCCs). While the Court acknowledged the possibility of environmental benefit of the mixing zone provisions, the Court found that EPA failed to show that the provisions were justified in light of the costs. EPA continues to support elimination of mixing zones for BCCs within the Great Lakes Basin wherever it is technically and economically feasible to do so. Thus, EPA intends to propose reinstating this provision in the near future.

8. Stream Design Flow Policies

States and Tribes typically identify, within their water quality standards, stream design flow conditions to implement numeric water quality criteria. The stream flow conditions are typically expressed as predictable low flow conditions below which numeric water quality criteria do not apply. Examples of commonly used stream design flows include: the lowest seven consecutive day average stream flow that has the annual probability of occurring once in ten years (7Q10); the lowest single day stream flow that has the annual probability of occurring once in ten years (1Q10); and the harmonic mean stream flow. The stream design flows typically employed with aquatic life criteria (i.e., 7Q10 and 1Q10), sometimes referred to as critical low flows or drought flows, are intended to define stream flow conditions at and above which the designated uses are presumed to exist and applicable numeric water quality criteria must be met in order for those uses to be attained. The underlying concept is that these low flow events are a part of the dynamic hydrologic character of all flowing water bodies. Low flow conditions present special challenges to the integrity of the aquatic community. Even under these low flow conditions, however, the long-term beneficial use could be maintained unless toxic conditions stress the aquatic community beyond its ability to tolerate and recover.

In practice, stream design flows serve several purposes in addition to defining the minimum stream flows below which numeric water quality criteria do not apply. Many States and Tribes have used the stream design flows, or fractions thereof, to define the amount of stream flow that can be assumed to always be available to dilute effluent. Under rapid and complete mixing conditions, the entire stream design flow is used as the basis for determining permit limits. That is, no mixing zone is necessary. Under slow or incomplete mixing conditions, where a mixing zone is necessary, fractions of stream design flow are used to calculate assimilative capacity on which permit limits can be based; in other words, to crudely define the mixing zone. Often this default approach is used by regulatory agencies in response to limited resources, lack of site-specific information and the time pressures of permit reissuance. This default approach to defining the mixing zone is, in EPA's view, acceptable as long as the mixing of the effluent in the receiving water occurs away from critical areas and the amount of dilution provided is conservative for a broad range of possible effluent/receiving water dilution scenarios. However, where a complete mixing assumption does not hold true, such as where an effluent plume does not disperse quickly, and too much of the receiving water is allocated for dilution, this default assumption approach will not ensure attainment of water quality standards because numeric water quality criteria will be exceeded in a larger area than anticipated (outside the regulatory mixing zone). The default use of fractions of stream design flows instead of more exacting mixing zone determinations is not always appropriate. In some instances, the effluent plume may never fully mix with the specified amount of receiving water, resulting in plumes where criteria are exceeded extending far beyond what may be considered protective of designated uses or allowed under standards. EPA has recommended that site-specific information on the mixing characteristics of a discharge be collected to verify the level of protection assumed to be provided to a water body using default mixing zone provisions.

EPA believes it is important for individual States and Tribes to make consistent dilution allowance decisions from one site to the next. Requiring States and Tribes, as part of their water quality standards, to specify how dilution allowances under complete and incomplete mix situations will be established may be an appropriate way to ensure consistent decision-making.

To best define dilution allowances for implementing water quality standards, it is useful to define both stream design flows and effluent design flows. In particular, a distinction should be made between the stream design flows to be used for different ambient water quality criteria (e.g., aquatic life acute, aquatic life chronic, human health carcinogen). In addition, effluent design flows may vary in some cases based upon seasonal changes or production cycles. Stream design flows may be applied as a maximum dilution allowance or adjusted in individual cases based on

any stream-specific or pollutant-specific considerations. Stream design flows, if they are used, must correspond to the duration and frequency components of the ambient water quality criteria contained in the State or Tribal water quality standards. Currently, States and Tribes must justify the scientific validity of their stream design flow policies where they differ from EPA's recommendations. States and Tribes may also establish specific guidelines for restricting dilution allowances in individual cases (e.g., States and Tribes may adopt special restrictions on dilution allowances for human health criteria where a discharge is within 2 miles of a drinking water intake).

EPA's Great Lakes Guidance and its Technical Support Document for Water Quality-Based Toxics Control identify acute and chronic stream design flows to be utilized in drafting permit limits. The Guidance establishes a 7Q10 or 4-day, 3-year biologically-based stream design flow for implementation of the aquatic life criterion continuous concentration (chronic criteria); a 1Q10 for the implementation of the aquatic life criterion maximum concentration (acute criteria); harmonic mean flow for implementation of human health criteria; and a 90Q10 for the implementation of wildlife criteria.

In cases where complete and rapid mixing of effluent with receiving water does not occur, site-specific mixing determinations must be made. Although the selection of fractions of stream design flows for the assignment of available dilution for point source discharges does affect the size of the regulatory mixing zone, such default assignments are not hydrologically linked to the actual behavior of the effluent plume in the receiving water, may not protect swimming and drifting organisms or sessile or benthic organisms and are not equivalent to a mixing analysis. There may be other instances where the reliance on a fixed percentage of flow or cross-sectional area of the receiving stream in lieu of an actual mixing analysis may not reflect the mixing behavior of an effluent. In some high dilution situations, there may be more rapid dilution occurring than is assumed in dilution calculations.

If complete and instantaneous mixing actually occurs, using less than 100% of the design flow can be a means of accounting for situations where the actual assimilative capacity of the water body is unknown. States and Tribes typically determine water body assimilative capacity based on ambient background concentration of a pollutant, when data on such concentrations is available. The assimilative capacity is the difference between the background level of a pollutant and the highest level that would comply with the water quality criterion. Where information on all sources of a given contaminant to a specific water body is incomplete, or where the State or Tribe wishes to reserve assimilative capacity for the future, States and Tribes should allocate less than 100% of the assimilative capacity of that water body at design flow by utilizing less than 100% of the design flow for dilution. EPA is interested in comment addressing the use of these stream design flows or fractions of stream design flows in setting mixing zones and in reserving assimilative capacity in a water body.

The Great Lakes Guidance allows States and Tribes to use default assumptions for available dilution in the absence of site-specific mixing data. The default dilution assumption for open waters (e.g., lakes) provides for ten-to-one dilution. The Guidance also allows for a demonstration to determine actual mixing zone water quality, size, placement and behavior. Under the Guidance, for open waters, in no case can mixing zone size exceed that area in which discharge-induced mixing occurs. As a default, the Guidance restricts the mixing zone for protection of aquatic life from acute effects (i.e., the dilution allowed in calculating limits based on an acute aquatic life criterion or CMC) to 2 parts receiving water to 1 part effluent, at water body design flow or volume.

As a default for implementing criteria for the protection of aquatic life from chronic effects (CCC) in flowing waters (e.g., rivers and streams), the Great Lakes Guidance allows States and Tribes to use up to 25% of the design flow for dilution. If a site-specific mixing analysis is performed, a larger mixing zone may be established. Mixing zones for acute aquatic life criteria in flowing waters are limited to the final acute value or FAV (2× the acute criterion) just as in open waters. EPA is interested in comment on whether this FAV default "cap" approach is appropriate for waters outside the Great Lakes Basin.

As stated above, the Great Lakes Guidance allows increases above the default mixing zone allowances when site-specific mixing zone analyses are conducted. These demonstrations compile data on the mixing behavior of the effluent at a particular site (e.g., the size, shape and location of the mixing zone). The Guidance also required that mixing zones maintain existing and designated uses and comply with narrative water quality criteria (e.g., "free froms").

The Great Lakes Guidance also specifies that mixing zones may not jeopardize the existence of threatened or endangered species or their critical habitat.

EPA advocates the watershed approach to water quality protection. For the water quality standards program, the emphasis has been toward refinement of designated uses and incorporation of new and emerging sophisticated and integrated analytical tools as a means to better characterize the ecological condition of water resources and more effectively protect designated uses (see section I(A) "General Purpose and Vision" of this document). The development and implementation of mixing zone policies by States and Tribes constitutes risk management at the sub-watershed level. EPA has consistently emphasized the need to ensure that State and Tribal mixing zone provisions protect the designated uses of receiving waters. Site-specific data collected through a mixing zone analysis will ensure that designated uses will be protected the loss of ecological integrity from the discharge of effluents will be prevented. An emphasis on the protection of designated uses and maintenance of ecological integrity is essential to the watershed approach. The watershed approach requires increased site-specific information on local aquatic systems and an assessment of the impact of all discharges to local ecosystems. The watershed approach also depends upon the meaningful involvement of local communities in risk management decision-making. Explicit, clear implementation policies provide the public with the information necessary to understand decisions being made by regulators and the impact of those decisions on local resources.

Request for Comments on Mixing Zone Policies and Implementation Procedures

EPA requests comment on the following questions:

1. Should the regulation be changed to expressly require States and Tribes to include a statement in their water quality standards indicating whether mixing zones are allowed?

2. Should the regulation be changed to expressly require States and Tribes to specify procedures by which mixing zone decisions for individual discharges would be made?

3. Should the regulation be modified to identify the minimum requirements or elements for State and Tribal mixing zone policies (including size, location, and methodologies)?

4. Consistent with current EPA policy, should the regulation explicitly require narrative criteria to apply in mixing zones?

5. Should the regulation require States and Tribes to identify in their mixing zone provisions what minimum water quality conditions are required within mixing zones?

6. Are there any circumstances, types of pollutants or water body types (e.g., wet weather discharges) where mixing zones should be restricted or prohibited?

7. Should mixing zones for bioaccumulative pollutants be prohibited? If so, under what circumstances? Should such prohibitions be addressed on a water body- or basin-specific basis? Should EPA allow exceptions to any such prohibitions?

8. Should the regulation require States and Tribes to specify procedures and decision criteria for evaluating complete and incomplete mixing?

9. Should the regulation require different mixing zone/dilution procedures for complete and incompletely mixed situations?

10. Should an assumption of rapid and complete mixing within State and Tribal implementation procedures be prohibited except where a defensible technical rationale is included in each site-specific determination?

11. Should the regulation explicitly allow the use of default mixing zone assumptions based on fractions of stream design flow in the absence of site-specific data?

12. Should the regulation be clarified, consistent with current EPA policy, to require States and Tribes to identify the water body design flows or volumes upon which their water quality standards are based?

F. Wetlands as Waters of the United States

The current water quality standards regulation contains no definition of "waters of the United States," although this term is used in the definition of "water quality standards." The phrase "waters of the United States" has been defined elsewhere in Federal regulations, including regulations governing the National Pollutant Discharge Elimination System (NPDES). That definition at 40 CFR 122.2 includes wetlands whose use, degradation or destruction could affect interstate commerce and wetlands adjacent to other waters of the U.S. However, because this definition does not appear in 40 CFR 131, some have questioned whether Part 131 applies to wetlands. EPA's position is that the Part 131 regulations do apply to wetlands. EPA is considering including the definition for "waters of the United States" under the standards regulation as well, or, at a minimum, cross-referencing the definition at 40 CFR 122.2 as a means of clarifying that the existing regulation applies to wetlands that fall within the definition of waters of the United States. Currently, EPA plans no review or revision of the existing definition of "waters of the United States" as part of any revision of the water quality standards regulation. Therefore, under the ANPRM, EPA is interested in comment limited to whether the existing definition should be included within the standards regulation in some form.

EPA believes that some States or Tribes may not be providing the same protection to wetlands that they provide to other surface waters, including designation of attainable uses consistent with the CWA and assignment of protective water quality criteria. Therefore, EPA wishes to emphasize that wetlands require the same protection under water quality standards as other waters of the U.S. Section 303 of the CWA requires the protection of all "waters of the U.S." under standards. Addition of the definition of "waters of the U.S." under a revision of the regulations would not constitute an expansion of authority or application, but merely a clarification of those requirements already contained within the CWA. Treatment of jurisdictional issues would not be affected by such a revision, including treatment of waters constructed as waste treatment systems (e.g., wetlands constructed for wastewater treatment). Notwithstanding protection of wetlands under other provisions of the CWA (e.g., Section 404), Section 303 clearly establishes a baseline level of protection applicable to all waters. Further, it is this treatment under water quality standards which provides for protection of wetlands as applied under Section 404.

Necessary components of water quality standards for wetlands are designated uses and criteria, as defined in 40 CFR 131.6. EPA recognizes that uses and criteria should reflect the unique physical, chemical and biological characteristics of wetlands. States and Tribes are encouraged to develop and adopt appropriate classification systems which provide protection of beneficial uses of wetlands through the application of physical, chemical and biological criteria. EPA also recognizes that certain parameters, conditions or even pollutants may be most appropriately addressed by criteria which specifically reflect differences between wetlands and other surface waters.

Request for Comments on Wetlands

EPA requests public comment on the following questions:

1. Should "waters of the United States" be defined in the water quality standards regulation?

2. Should EPA provide explicit reference in the regulation to the applicability of water quality standards to wetlands?

3. Do the current regulation and existing guidance provide the necessary regulatory clarity, technical tools, and incentives for States and Tribes to develop appropriate standards for wetlands?

4. Are specific programmatic changes needed to facilitate the development of water quality standards for wetlands?

G. Independent Application Policy

1. Introduction

Section 101(a) of the Clean Water Act states: "The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To this end, States and Tribes designate single or multiple uses for their waters including aquatic life protection. For the purposes of assessing the extent to which aquatic life is protected and whether actions to protect aquatic life are needed, the CWA requires that States and Tribes adopt water quality criteria necessary to support designated uses. For waters where aquatic life protection is an applicable designated use, the extension of the CWA requires States and Tribes to adopt criteria protective of aquatic life. Taken together, chemical, physical, and biological integrity define the overall ecological integrity of an aquatic ecosystem. Over the years, EPA, States and Tribes have developed various tools to assess the extent to which water quality attains this objective. These tools have been developed to build on and support the capabilities of each other and provide a comprehensive set of elements necessary for implementing water quality standards and achieving the objective of the CWA. EPA policy and guidance recommends that States and Tribes use chemical-specific, toxicity, and biological criteria to monitor and protect designated uses. In 1991, EPA established its policy on independent application (U.S. EPA, transmittal memorandum of final policy on biological assessment and criteria from Tudor Davies to Regions, June 19, 1991). EPA's independent application policy speaks to how assessments based

on these three kinds of criteria are to be integrated into all forms of water quality management decision-making. EPA's independent application policy and the ensuing discussion here address the issue of how the three different kinds of assessments are interpreted only in the context of protection of aquatic life and aquatic life uses and not in the context of protection of human health or wildlife.

With the advent of different ways of assessing the health of aquatic systems comes the possibility of conflicting results. To address such conflicts, EPA developed the policy of independent application. Independent application states that where different types of monitoring data are available for assessment of whether a water body is attaining aquatic life uses or for identifying the potential of pollution sources to cause or contribute to non attainment of aquatic life uses, any one assessment is sufficient to identify an existing or potential impact/impairment, and no one assessment can be used to override a finding of existing or potential impact or impairment based on another assessment. The independent application policy takes into account that each assessment provides unique insights into the integrity and health of an aquatic system. In addition, each assessment approach has differing strengths and limitations, and assesses different stressors and their effects, or potential effects, on aquatic systems. For example, while biological assessments can provide information in determining the cumulative effect of past or current impacts from multiple stressors, these assessments may be limited in their ability to predict, and therefore prevent, impacts. While chemical-specific assessments are useful to evaluate and predict ecosystem impacts from single pollutants, chemical-specific methods are unable to assess the combined interactions of pollutants (e.g., additivity). Similar to biological assessments, toxicity testing provides a means of evaluating the aggregate toxic effects of pollutants, and like chemical assessments, can also be used when testing effluent to predict single chemical impacts. One of the limitations of toxicity testing, however, is that the identification of pollutants causing toxicity is not always possible or cost-effective. Each of these three assessment approaches relies on different kinds of water quality data, measures different endpoints and, in practice, will be interpreted in the context of implementing a water quality management program that includes assessment and pollution control. EPA's policy on independent application is based on the premise that any valid, representative data indicating an actual or projected water quality impairment must not be ignored when determining the appropriate action to be taken. Independent application recognizes the strengths and limitations of all three assessment approaches.

The next three sections briefly describe three assessment approaches (biological, toxicological and chemical) one could likely be evaluating when using independent application. Those three sections are then followed by two parallel discussions on different uses of water quality data. One use relates to the NPDES permits program to determine whether a permit must contain water quality-based chemical or toxicity limits, and what those numeric limits should be. The other relates to the use of such data to evaluate the quality, or condition, of waters under the CWA section 305(b) and 303(d) programs. At the core of both of these contexts is the question "are the present applicable water quality criteria complete and appropriate for the water body, and how are we to measure attainment of the present or future criteria that apply to any water body in question?" Thus, in its most basic sense, independent application remains a water quality standards question. Any changes to or clarifications of the policy on independent application must therefore be considered first under the rubric of water quality standards and then in the separate contexts of permitting and water quality evaluation which are based on water quality standards.

States and Tribes routinely determine whether water bodies are attaining their designated uses and whether existing pollution controls adequately protect those uses. Some States and Tribes have recommended to EPA that it modify the independent application policy. Currently, EPA's policy of independent application is the same for both NPDES permitting and water quality assessment programs. However, EPA recognizes that each of the programs has somewhat different data needs and attributes. Therefore, today's notice separates the two distinct uses of independent application to better focus the discussion.

a. Biological Assessments. Biological assessments are based on quantifying differences between expected biological community attributes such as structure, function and condition (known as a reference condition) and the biological community attributes found at a specific site being evaluated. The extent to which the community at the site deviates from the reference conditions is indicative of the degree of impairment at the specific site. The strength of biological assessments is their ability to provide a direct measure of the health of aquatic ecosystems. Biological assessments are also able to detect non-chemical impacts (e.g., habitat loss, sedimentation, temperature effects) in addition to chemical toxicity problems.

States and Tribes that use biological assessments, use them primarily to evaluate the ecological condition of water bodies and to determine whether a water body is healthy, threatened, or impaired (i.e., aquatic life use attainment decisions). In some instances, States and Tribes have used biological assessments to establish monitoring requirements in an NPDES permit, but generally, most use bioassessments to make non-regulatory, general, water resource management decisions. Data from a biological assessment can be compared to a gradient that shows the reference (expected) conditions without impairment on one end and the worst situation on the other. States and Tribes generally use the results to determine whether additional measures are needed to protect the water segment, or determine how close to attainment an impaired system is. Biological assessments can also play a role in linking impairment to causative agents. This link is often not definitive, but can be very useful in helping to identify the causes and sources of many impairments. Some States and Tribes have used indicator species or groups to distinguish effects of toxicity from effects of organic enrichment. For example, one State documented that a midgefly larvae is found to be predominant in areas contaminated by electroplating or metal wastes. Although biological assessments cannot be used to predict conditions in a mathematical modeling sense, over time they can be used to indicate the direction of change, and the degree of that change, in the condition at a particular site. This information, where it is based on enough data using relatively sensitive appropriate metrics, can be very valuable in deciding whether the current condition is likely to be maintained under similar conditions in the future, or whether there are early warning signs of biological impacts giving reason to believe that additional regulatory actions may be needed to prevent water quality standards impairment. Regulatory actions that are a response to measured change in biological condition will tend to be restorative more than preventative (i.e.,

once biological impact is measured, by definition, that impact was not prevented). Although, slight changes that are not sufficient to render a water in non-attainment of its aquatic life use, can provide early warning of potentially more significant future changes. In contrast, as noted above, regulatory actions based on impairment predicted, for example via a chemical-specific modeling analysis, tend to be preventative. To the extent that conditions in a water body do change (e.g., flow), biological assessments do not reveal potential future impacts under other exposure conditions (e.g., low-flow conditions). Programmatically, there are concerns regarding quality assurance and quality control for various biological assessment techniques since they have yet to be promulgated, or standardized, in any EPA programs. This is mainly due to the site-specific nature of biological assessments. Implementation of biological criteria is also discussed in section (B) of this notice.

b. Toxicological Assessments. Toxicological assessments are conducted by exposing aquatic organisms to effluent or ambient water samples or sediment samples in a laboratory and determining the effects on the exposed organisms. Because toxicity assessments evaluate the overall effects of the entire suite of constituents in a sample, they are ideal for identifying interactions between chemicals that can alter the expected effects of individual chemicals on exposed organisms. Toxicity assessments also capture the toxic effects of chemical compounds not commonly monitored for or for which chemical-specific criteria are lacking. In addition, because it can be manipulated in the laboratory, toxicity testing can predict the likelihood of ecological impacts before they occur. This allows safeguards to be put into place before an actual ecological impact occurs.

Toxicity assessments are usually limited by the variety of species that can be cultured in the laboratory. While numerous test species can be used to evaluate the toxicity of individual samples, typically only two or three species are used for such tests. By comparison, eight different families are required to develop chemical-specific criteria. For some toxicants, the broader sensitivity range provided by testing eight different families is particularly important, for example, where the mode of toxicity action is specific (e.g., pesticides). Identifying the cause of toxicity can, in some situations, be a difficult, expensive, and lengthy process. Another consideration is that toxicity testing does not detect habitat perturbations which can greatly limit a water resources aquatic life use. Finally, toxicity assessments are only valid for as long as all the sample testing conditions remain the same. Ambient conditions affecting toxicity may change over time necessitating additional testing.

c. Chemical Assessments. Chemical assessments measure individual chemical constituents (e.g., copper, lead) or chemical conditions (e.g., pH, temperature, hardness, organic content) in a medium. Chemical assessments may be performed on effluent or ambient water samples or sediment samples. Chemical analyses are usually simpler to conduct and generally less expensive than toxicity assessments or bioassessments, particularly if there are only a few chemicals of concern, but the information from these tests may provide limited insight into the ecological condition of the water body. If information is available on pollutant persistence and degradation, modeling can be used to predict pollutant fate and transport under a variety of exposure scenarios. Further, chemical-specific assessments are ideal for predicting the likelihood of ecological impacts where they may not yet have occurred either because a proposed activity affecting water quality has not been implemented or critical exposure conditions have not yet been experienced by the aquatic community. For these reasons, regulatory actions based on chemical-specific assessment can be preventative as well as restorative.

Basing regulatory and management decisions on chemical assessment of water quality is an important and proven aspect of water quality assessment and protection. However, as an indirect measure of aquatic health, one of the principal limitations to chemical assessments is dependence upon chemical-specific benchmarks (such as chemical water quality criteria) for determining whether water quality is suitable or unsuitable for attaining and maintaining aquatic life uses. As noted elsewhere in this notice, stressors other than specific chemicals in a water body are often a significant or even predominant cause of nonattainment of aquatic life uses. EPA's current thinking is that complete reliance on chemical-specific assessments of water quality is too narrow of a focus and fails to provide information on other important ecosystem stressors. In addition, as noted elsewhere in this notice, there are currently water quality criteria for the protection of aquatic life for 31 chemicals. There are tens of thousands of chemicals discharged into surface waters. (Note, however, that the chemicals for which there are criteria tend to be the most frequently discharged). Thus there is the added problem of too few criteria and too many chemicals, making it inappropriate to rely *exclusively* on the chemical-specific approach. Another substantial limitation of chemical-specific benchmarks is that for a given site, the benchmarks that are used, may not be the best that are available to reflect the level of protection applicable at the site. For example, site-specific aquatic life criteria are generally different (higher or lower) than the national recommendations for the same chemical. And yet absent site-specific criteria, the national recommendations are often used.

2. Independent Application and Water Quality Assessments

a. Independent Application. States and Tribes often collect or have access to monitoring data that measure the concentration of specific chemicals in an effluent or water body, the level of toxicity present in ambient water or discharges to a water body and/or the biological community composition within a water body. These data are then interpreted by comparing them to reference conditions or criteria to determine whether or not aquatic life uses are attained. EPA's 1991 policy on independent application was explicit about the use of independent application in water quality programs: "This policy, therefore, states that appropriate action should be taken when any one of the three types of assessment determines that the standard is not attained. States and Tribes are encouraged to implement and integrate all three approaches into their water quality programs and apply them in combination or independently as site-specific conditions and assessment objectives dictate." In implementing this policy, EPA recommends that data from the three assessment approaches be applied independently in water quality programs since each method provides unique and distinct information on the characteristics of the water body. In other words, EPA recommends that differences in assessment results be resolved in one of two ways: either presume an adverse impact when any one source of data indicates an adverse impact, or reevaluate the complete data set and modify the applicable criteria to account for the new site-specific information. Given EPA's mission to protect the environment and absent definitive data to demonstrate that an assessment is in error or otherwise biased, EPA presumes

where an assessment indicates impairment, that assessment is valid.

In the context of applying the independent application policy to the assessment of water bodies, there are two distinct CWA provisions to consider: (1) section 305(b), which requires States and Tribes to report to EPA and EPA to report to Congress a description of the quality of the Nation's waters; and (2) section 303(d), which relates to identification of waters where technology-based limitations and other required controls are not stringent enough to ensure that applicable water quality standards will be attained and maintained. With respect to the section 305(b) Report, the CWA broadly calls for States and Tribes to assess water quality conditions in a biennial report. EPA transmits these reports to Congress, together with an analysis of the reports describing water quality conditions. Because these are water quality assessment reports that States and Tribes submit to EPA, and not specific regulatory decisions, there may be sufficient flexibility in the interpretation of data to allow a more integrated approach to evaluating limitations and inconsistencies in the interpretation of data produced under various approaches. For example, direct assessments of the condition of the waters (e.g., biological assessment) could be weighted more heavily than indirect measurements (e.g., chemical and toxicity).

With respect to section 303(d), the CWA and EPA's implementing regulations require States and Tribes to identify those waters for which technology-based limitations and other required controls are not stringent enough to achieve water quality standards applicable to such waters. *See* 303(d)(1)(A), 40 CFR 130.7(b)(1). When identifying waters pursuant to 303(d), the methods used to determine non-attainment of standards for water quality reporting under 305(b) should also be used. However, water bodies are eliminated from 303(d) list consideration if technology-based controls or other required Federal, State, Tribal or local requirements will result in the attainment of applicable water quality standards. TMDLS developed to secure restoration of designated uses are largely dependent upon chemical criteria and assessment to define acceptable pollutant loadings.

The question arises as to whether States and Tribes have the flexibility to exclude a water body from 305(b) reports and 303(d), i.e., conclude that the designated use was protected, even in the face of data indicating one or more excursions of the applicable chemical-specific water quality criteria. EPA would like to consider possible mechanisms under the existing CWA and the legal theories supporting them to address these questions.

As with determining the need for regulatory controls (permit limits), similar data evaluation issues face States, Tribes and EPA in performing water body assessments for purposes of sections 303(d) and 305(b) of the CWA. With respect to such assessments, EPA's goals for States and Tribes are twofold: (1) to encourage the use of chemical, toxicological, physical and biological data in making water body assessments; and, (2) to ensure that the data are interpreted and reported in a consistent and scientifically defensible manner so that documents such as the 305(b) report to Congress provide valid and useful information on the status of the Nation's waters as a whole, irrespective of State or Tribal boundaries.

EPA recognizes that there may be instances where these goals appear to be in conflict. It is possible that as States and Tribes implement biological assessment programs, they may identify new areas of impact that were previously undetected using other assessment techniques and that this may lead to a reluctance on the part of States and Tribes to develop the expertise necessary to conduct biological assessments. Although this tendency is contrary to the goals and objectives of the CWA, the fact is that addressing new and previously unaddressed threats to surface water quality places additional strain on already limited State and Tribal resources. Some also feel that adherence to a strict independent application policy for assessment purposes discourages the use of more data than minimally needed to make an aquatic life use assessment. In most cases, the minimal amount of data would be a chemical grab sample for a few water quality characteristics such as temperature, pH, BOD, or dissolved oxygen. Collecting minimal data for assessment reporting is much easier and less resource intensive for States and Tribes that are required to increase their reporting coverage, and these States and Tribes would not have to deal with differing interpretation of assessment results.

However, EPA believes that placement of waters on section 303(d) and section 305(b) lists should be based on broad thorough assessment data, not on limited and narrow data. The former will help ensure that targeted water quality controls and management actions are appropriate and will result in water quality standards attainment; the latter can result in significant outlays of State and Tribal resources targeted on waters where water quality problems are not well understood. EPA is considering how best to obtain accurate, high-quality assessment data and how to reconcile differences between assessments conducted using different techniques in a manner that fosters consistency and remains scientifically defensible.

b. Alternatives to Independent Application.

There is considerable sentiment among various stakeholder groups that there is a need to better incorporate more comprehensive data, particularly biological data, into the water quality assessment framework described above and that doing so will facilitate collection and use of more integrated and insightful water quality data. EPA shares this view. Some have used the term "weight-of-evidence" to describe an alternative to the present EPA policy of independent application that could facilitate integration of chemical, physical, toxicological and biological data into the assessment program. However, EPA recognizes that individuals' views about the meaning of the term "weight of evidence" vary considerably and this variation should be addressed. The term "weight-of-evidence" has been interpreted by some to mean that one approach to assessment, e.g., biological, could routinely be used to override conclusions drawn using another assessment technique, e.g., chemical. EPA believes that approach is hierarchical, not a weight-of-evidence approach. EPA's position is that each approach, chemical, toxicological, physical and biological has inherent strengths and limitations and that all valid water quality assessment data generated under any of these approaches should be used in assessing the health of aquatic ecosystems, in ways that adequately take into account the strengths and limitations of each approach.

EPA's current thinking is that as forms of water quality assessment data have become broader (chemical, physical, biological and toxicological), and as the amount of such data increases, the water quality standards and assessment programs need to facilitate continued collection and use of such data, and that doing so will lead to more thorough water quality assessments, more insightful water quality criteria, and better descriptions of aquatic life designated uses. EPA would not support an approach that could lead to collecting fewer and narrower water quality data by States, Tribes and dischargers. On the contrary,

EPA's current thinking is that to employ a weight-of-evidence approach, a State or Tribe (or EPA) would need to have a comprehensive set of water quality data to evaluate the chemical, physical, toxicological and biological conditions in a water and to conduct ecological impact assessment to determine the precise causes of impacts (chemical, physical, biological, and toxicological) and how best to address them. EPA's current thinking is that the most appropriate context for using a weight-of-evidence approach would be in establishing criteria. In addition, as discussed below, EPA is interested in evaluating the use of a weight-of-evidence approach for assessment and reporting under section 305(b) of the CWA. However, once the criteria are established for a water body, the assessment for purposes of listing under section 303(d) of the CWA and permitting under NPDES, must be based on all applicable water quality criteria.

EPA's 305(b) reporting guidelines interpret the independent application policy to apply to aquatic life use assessments for State 305(b) reports, not just to permitting for protecting waters due to reasonable potential to violate water quality standards. This policy helps protect against dismissing valuable information when evaluating aquatic life use attainment, particularly in detecting impairment. This approach is most protective when there is limited data available and when there is no documentation on the rigor of the assessment. EPA is concerned that lack of information can provide false confidence about the health of the nation's water bodies. However, EPA is now developing a comprehensive approach for conducting aquatic life use assessments which integrates chemical, toxicological, physical and biological data, and includes consideration of the strengths and limitations of the assessment methods and the data. This shift toward more integrated assessments is reflected in EPA's most recent guidance to the States and Tribes on conducting 305(b) assessments, particularly in determining nonattainment (EPA's Guidelines for Preparation of the 1996 State Water Quality Assessments (305(b)) reports, EPA 841 B–95–001) and is the primary focus of the Office of Water's Criteria and Standards program Plan. The 1996 305(b) guidelines are consistent with the Policy on Independent Application while incorporating a weight-of-evidence approach in determining the degree of impairment (partial or nonsupport). The 1996 guidelines do not allow for a finding of full support, or attainment, of aquatic life use when there are differences in assessment results. Under certain circumstances, however, the guidelines allow for the possibility of a finding of partial support, even where results of different assessments are not fully consistent. Generally, *in assessing severity of impairment,* assessments based on data with high levels of information, or rigor, should be weighted more heavily than those based on data with low levels of information, and, rigorous biological data should be weighted more heavily than other data types. EPA recommends that the results of biological assessments, especially those with high levels of information, be the basis for the overall aquatic life use support (ALUS) determination if the data indicate impairment. This is because rigorous biological data provide a direct measure of the status of the aquatic biota and detect the cumulative impact of multiple stressors on the aquatic community, including new or previously undetected stressors.

Determining the level of information or rigor for each assessment is a critical component of the 305(b) guidelines on making an ALUS determination. The levels of information allow characterization of the quality and the temporal and spatial coverage of the data States and Tribes utilize to conduct their use assessments. Levels of information are identified for assessments based on biological, physical, chemical and toxicological data. For example, measures of the condition of the aquatic community using indices incorporating multiple assemblages of aquatic organisms based on a regional reference approach would rate higher than a measure of a single organism or single metric or annual fixed station monitoring for chemical contaminants. Likewise, three years of bi-monthly fixed station monitoring for chemical contaminants would rate higher than annual fixed station monitoring for the same chemicals or a biological measure of a single organism or metric. Understanding the breadth and robustness of the assessment methods used in evaluating whether a water body is attaining its designated aquatic life use is important information for EPA, the States, and the public.

In the future, EPA will be evaluating possible scenarios where a finding of full support could be justified despite differences in assessment results. For example, a finding of full support based on rigorous biological data may be justified despite differences with chemical specific assessment results *depending* on the magnitude and frequency of the chemical exceedances and the applicability of the chemical benchmark to the site. It will be important for EPA to carefully evaluate such potential scenarios and to define the adequate data requirements and level of rigor necessary to support a determination of full support despite differences in assessment results. Equally important, EPA will need to carefully consider the ramifications of such determinations on other parts of its water program.

Another permutation of the weight-of-evidence approach to aquatic life use assessment is to establish a hierarchy in which the results of one method could always override the other methods should there be difference in assessment results. Most frequently, it has been argued that biological assessments could always override chemical assessments in determining whether the designated aquatic life uses are being attained. Some prefer this approach because a rigorous biological assessment provides a direct measure of existing ecosystem health and have expressed concern that the policy of independent application oversimplifies the relationship among different data sets used to assess current water quality conditions. Proponents of this approach contend that biological assessment is an integrated assessment that incorporates the information that would be provided through either chemical or toxicological assessments into a single, comprehensive measure of aquatic ecosystem health. Some advocate the acceptance of rigorous biological data as the ultimate arbiter of aquatic life use attainment. They also suggest that, at least with respect to current aquatic life condition assessments, chemical, toxicological, and biological assessments are not independent; each measures the same assessment endpoint, but from different stressors. These proponents say that biological assessment is the only assessment approach available to integrate and reflect current effects from chemical, toxicological, physical, and nonpoint source stressors. Because of this they suggest that rigorous data based on biological assessments and criteria should automatically supersede data from other sources when determining aquatic life use attainment. Some contend that if biological data demonstrate that biological criteria are attained, then the water body is attaining its designated use, even if other monitoring data such as toxicological or chemical data demonstrate an excursion, or potential for an excursion, above a water quality criterion.

Some also contend that rigorous biological assessments should be used

to supersede assessments based on predicted impacts such as water quality modeling and wasteload allocations in decision making for aquatic life use assessments. One concern with this perspective is that non-rigorous biological assessments could be used in such situations, though EPA has 305(b) reporting guidance which suggest minimum quality of biological assessments that could also be used for these situations. In this guidance, EPA recommends using more than one assemblage (fish and/or macro invertebrates/and or algae), several index values or metrics (multiple metrics), an index period for sampling, and ecoregional or other biogeographic regional calibration.

EPA agrees that rigorous biological assessment based on adequate site-specific data is a direct assessment of aquatic ecosystem health, unlike chemical and toxicity assessments. However, biological assessments are less well suited for use in preventing water quality impacts and will only reflect impacts once they have occurred. Though this may be less of a concern in waters with a relatively constant level of discharge where there has been ongoing biological assessment. A second objective of water quality assessment under the CWA, beyond assessing when the aquatic life use is impaired, is assessing when stressors, if left unchecked, will cause impairment. As discussed above, the chemical-specific approach is especially strong for use in identifying and predicting impacts before they happen.

EPA is concerned that the use of a hierarchical approach may ignore or undermine valuable information, whether that information is biological, physical, chemical, or toxicological, and not trigger the appropriate action to address the inconsistency (e.g., evaluation of existing criteria and development of site-specific criteria). Therefore, EPA does not support such an approach. EPA has a number of concerns with any approach wherein data from certain assessment techniques may be automatically superseded by those from others. A primary concern is the failure of such a system to make use of all valuable information. In all cases, criteria, whether chemical-specific, toxicological, physical or biological, are derived with the intent of identifying a threshold beyond which unacceptable impacts to aquatic ecosystems are expected to occur. In most cases, it is expected that when different assessment techniques (i.e., chemical and biological) are used for determining attainment of aquatic life uses, the techniques will yield similar results if all are done rigorously. In addition, it is expected to be rare for chemical assessments to indicate nonattainment where biological assessment indicate attainment; analyses conducted by the State of Ohio confirm this. (See Yoder, C., ''Answering Some Concerns about Biological Criteria Based on Experiences in Ohio.''). However, it is also expected that in certain cases, different assessment techniques will result in different determinations of aquatic life use attainment due to the fact that each technique evaluates aquatic life use attainment differently, and some take into account safety factors for ensuring future attainment while others focus on the current status of the condition. When different assessment techniques that are intended to measure similar environmental endpoints and yield comparable results fail to do so, it may be an indication that assumptions underlying the criteria are not valid for a particular site, or that the data were not rigorous.

While in some cases it may be appropriate to weigh one set of data more heavily than another in making a use attainment determination, in others it may be preferable to take advantage of such circumstances as opportunities to validate and cross-check criteria, making adjustments as indicated by the data. This could result, for example, in an adjustment to a specific chemical criterion in a particular water if rigorous biological assessment indicated that such an adjustment is appropriate. Such information is also useful to EPA in improving national criteria development methodologies.

Lack of comparability in assessments is also a concern for either a weight-of-evidence or a hierarchical approach to aquatic life use assessments. Therefore, it is important that there be a common understanding between States, Tribes and EPA as to how conflicts in data interpretation will be resolved in evaluating and reporting water quality. Developing comparable methods to handle data conflicts will make comparisons between States and Tribes more useful, such as in 305(b) reports. Without a consistent approach to resolving data conflicts, assessments of water quality data at the national level becomes problematic. EPA's policy of independent application is one way of providing a consistent and defensible framework for data evaluation in order to minimize this problem.

Request for Comments on integration of data in water quality assessments

EPA is interested in comment on how chemical, physical, toxicological, and biological assessments can be effectively incorporated and implemented in State and Tribal water quality standards programs to achieve the goals of the CWA.

EPA requests comments on the following questions:

1. How can conflicting interpretations of water quality assessment data be reconciled in a scientifically defensible manner? Should each kind of water quality information stand alone as a scientific measure of current water quality conditions and ecosystem health? Alternatively, are there situations where one type of data should be given more weight than another in determining use attainment?

2. How should States and Tribes evaluate water quality information generated using chemical, toxicological, physical, and biological methods when determining use attainment status?

3. When interpretation of water quality data indicate inconsistent results, what factors (i.e., data richness), if any, should EPA consider relevant to determining ''appropriate actions''?

4. Should EPA explicitly address in the water quality standards regulation the evaluation assessments using chemical, toxicological, physical and biological assessment methods?

5. Should an approach be instituted where independent application may be relaxed for water quality assessment strategies and decisions when a State or Tribe has established a comprehensive monitoring and assessment program including biological monitoring and assessment? What guidelines should be used to evaluate a State or Tribal biological monitoring and assessment program?

6. How should the policy of independent application address the distinction between situations where adequate rigorous data are available for each assessment technique and situations where available data for one or more of the assessment techniques are limited in quantity or quality? Specifically, should the policy be modified to more explicitly encourage or require, where feasible, additional monitoring, particularly where limited data are to be used as a basis for regulatory action?

3. Independent Application and NPDES Permitting

a. Independent Application. Clean Water Act section 101(a) states that ''[t]he objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.'' In the context of implementing water quality-based pollution controls under the NPDES program, EPA has maintained that independent

application of all forms of water quality assessment data (i.e., chemical, physical, toxicological and biological) is clearly consistent with this objective. In addition to restoring impaired surface waters, water quality-based pollution controls are often implemented to prevent water quality standards impairment that projections indicate will occur in the absence of the water quality-based controls. Thus, predictive assessment tools are necessary and have proven effective in the NPDES water quality-based program.

An important question in NPDES permitting that EPA's policy of independent application was specifically developed to address is: how should differences in interpretation of water quality data produced using different water quality assessment techniques for aquatic life uses be reconciled? Upon examination of this question, EPA determined that differences in data interpretation do not necessarily equate to contradictory results. Different assessment results may be complementary since the different approaches can measure different aspects of water quality. For aquatic life uses, all three data types (chemical, toxicological, and biological) provide useful information and should be used to protect designated uses. Because the different types of assessments often focus on different aspects of aquatic community health and each has different strengths and limitations, it is possible that any one type of assessment may fail to detect impairments, or potential impairments of the designated use. For that reason, EPA's current interpretation of the CWA and its implementing regulations is that all three types of data (chemical, toxicological, and biological) should be used when evaluating the reasonable potential for a discharge to cause or contribute to an excursion above a water quality criterion and, if one approach indicates that water quality is, or will be, impacted, the results from the other methods could not be used to refute that finding. Under this approach, where "reasonable potential" is found, the NPDES permitting authorities must take appropriate "actions;" that is, implement water quality-based effluent limits that are derived from and comply with the applicable water quality criteria. These "actions" may also include additional monitoring to determine whether a problem exists, or to derive site-specific criteria if a particular criterion is found to be inaccurate for a site. The policy on independent application is presented in further detail in Chapter 1 of EPA's 1991 Technical Support Document for Water Quality-based Toxics Control (TSD) and in chapter 1 of EPA's Water Quality Standards Handbook—Second Edition, September 1994 (Handbook) (both documents cited above).

In the Great Lakes Guidance, EPA maintained its policy of independent application with respect to determining the need for water quality-based effluent limits, making it an explicit implementation requirement in the Great Lakes States. The Guidance, in Appendix F, Procedure 5, section F "Other Applicable Conditions," states "When determining whether WQBELs are necessary, information from chemical-specific, whole effluent toxicity and biological assessments shall be considered independently." (40 CFR Part 132, Appendix F, Procedure 5, Section F.3.).

In the permitting context, EPA's independent application policy reflects language in sections 301(b)(1)(C) and 303 of the CWA and permit regulations implementing these statutory provisions at 40 CFR 122.44(d). Pursuant to section 303 of the CWA, States and Tribes adopt chemical-specific numeric criteria and toxicity criteria as part of their water quality standards. Section 303(c)(2)(B) of the CWA further requires States and Tribes to adopt, as part of their water quality standards, numeric criteria for toxic pollutants for which EPA has published guidance under section 304(a), and whose discharge or presence in State or Tribal waters could reasonably be expected to interfere with the designated uses adopted by the State or Tribe for those waters. (As discussed elsewhere in this document, all States and Tribes have narrative water quality criteria as well.)

Section 301(b)(1)(C) of the CWA requires effluent limitations in NPDES permits that are "necessary to meet water quality standards" or necessary to "implement any applicable water quality standard." Consistent with this provision, EPA's permitting regulations at 40 CFR 122.44(d) require that effluent limits be imposed where the discharge has the "reasonable potential" to cause or contribute to an excursion above water quality criteria and specifically describe how those limits are to be expressed (e.g., chemical-specific versus WET limits). Therefore, once a numeric (or narrative) water quality criterion becomes part of a State's or Tribe's water quality standards, and a permitting authority determines that a discharge of a pollutant would have a reasonable potential to cause or contribute to an excursion above the applicable numeric or narrative criterion, the regulation requires that a limit for that pollutant be established as necessary to meet the water quality criterion. Although the CWA specifies that permit limits must meet water quality standards, it is the permitting regulations that specify the factors that must be considered when determining whether or not there is reasonable potential to cause or contribute to an excursion above a State or Tribal water quality standard, and specifically describe how such limits are to be expressed.

EPA regulations at 40 CFR 122.44(d)(1)(iii)–(v) describe the conditions under which water quality-based effluent limits for specific chemicals and for whole effluent toxicity are required in NPDES permits. While these regulations do not specifically use the term "independent application," the concept is expressly laid out. These regulations require chemical-specific limits when the permitting authority determines there is a reasonable potential for the discharge to cause or contribute to the excursion above the chemical-specific criterion. Likewise, the regulations require limits for whole effluent toxicity if the permitting authority determines there is a reasonable potential for the discharge to cause or contribute to the excursion above the numeric criterion for toxicity or narrative criterion for water quality. Except under limited circumstances (where the State or Tribe lacks a chemical-specific criterion for a pollutant of concern), these regulations do not allow a permitting authority to forgo one type of limit, e.g. a chemical limit, where another type of data, e.g., toxicity, indicate no toxicity. Instead, the two types of data are required to be considered independently.

The independent application policy provides a consistent and coherent protocol for resolving conflicts in interpreting monitoring data when determining "reasonable potential." Where such conflicts exist and cannot be reconciled, independent application directs States and Tribes to presume that the data that indicate a current or potential impact are valid and to take appropriate steps to prevent or remediate the impact. The reconciliation phase allows a State or Tribe to gather additional or more detailed data prior to taking regulatory action. Data interpretation conflicts may be best addressed by identifying the cause of the conflict and recalibrating the models and criteria to better reflect the newly acquired site-specific information. However, if the causes of the data interpretation conflicts cannot be resolved, under independent application, the State or Tribe must take

action based on the data indicating impairment or the reasonable potential for impairment of the water body.

EPA believes this procedure for addressing conflicting interpretations of monitoring data is appropriate for a number of reasons. First, as stated earlier, each of the different assessment techniques monitors aquatic ecosystem health from a slightly different perspective. Consequently, it is entirely plausible that only one of the assessment techniques would detect a real or potential impact. Second, assuming that the data generated by the different techniques are of comparable quality and relevance, an indication of a water quality problem using any of the techniques is sufficient reason to implement controls. That being the case, EPA believes the independent application of water quality data in determining when water quality-based effluent limits are necessary for individual dischargers is consistent with the CWA.

Reconciliation of data interpretation conflicts allows flexible evaluation of data. Once a permit application is received from a discharger, States and Tribes frequently engage in discussions with the discharger over the quality and representativeness of the data. This period of data review and evaluation is also an ideal time for addressing any data interpretation conflicts in order to ensure that permitting decisions are defensible and the permit limits that are imposed are necessary to protect designated uses. States and Tribes, together with permittees, may obtain additional data to verify earlier data or conduct timely studies to support the development of site-specific criteria. Ultimately, these site-specific criteria may serve as the basis for a permit limit, or a decision that it is not necessary to limit a pollutant in a particular discharge. All of the actions above are consistent with the independent application policy and the CWA.

Critics of EPA's policy believe either that data from certain types of water quality assessments have inherently greater value than data obtained by other means or that, in a sense, data quality and ecological significance should be averaged, such that if data obtained from two different assessment methods agree and data from a third disagree with the other two, the two could "outweigh" the one. In either case, all of the available data would be considered together, under the assumption that each assessment technique measures a similar endpoint. Under such an approach to data evaluation, limits on effluent toxicity would be appropriate and acceptable as surrogates for chemical-specific limits. Similarly, biological assessment data that do not indicate unacceptable levels of impact on the biological community could serve as the basis for a decision not to include either chemical-specific or effluent toxicity limits designed to support an aquatic life use in a facility's discharge permit. Proponents of this view argue that independent application forces them to take inappropriate regulatory actions when faced with conflicting assessment data. EPA does not agree in principle with this view.

b. Alternatives to Independent Application. States, Tribes, municipalities, and dischargers have expressed concerns that the policy of independent application results in more protection than is necessary to attain and maintain aquatic life designated uses. Many express a preference for an approach which invests data obtained using certain assessment techniques with greater credibility than those obtained in other ways. Such an approach, as discussed above, is sometimes referred to as a weight-of-evidence approach. Under such an alternative approach, assuming a high level of confidence in all the available data, one form of data—usually it is argued biological data— would be the ultimate arbiter of whether water quality-based effluent limits are needed in a discharger's permit. To determine, for example, whether a water quality-based effluent limit is needed for a particular chemical pollutant, the risk of adverse impact on the aquatic community would be determined based on all of the available data relying more heavily on high quality, thorough biological data and on the judgment of the individual conducting the evaluation. Several States and members of the regulated community have advanced this approach as preferable to EPA's independent application policy, arguing that such flexibility to exercise judgment is appropriate.

EPA's current thinking is that it should not promote an alternative approach to making "reasonable potential" decisions that places greater emphasis on biological data. Instead, EPA's current thinking is that such an evaluation of water quality and ecosystem health to determine the appropriate and applicable criteria against which discharges will be evaluated is most appropriately done during the setting of the applicable criteria for a water body. In that arena, it may be feasible to use biological assessment as a basis for determining the appropriate criteria for a given water body. However, once the criteria are set, EPA believes that the current regulation requires "reasonable potential" evaluations against all the applicable criteria, and that the policy of independent application in this context is appropriate.

If biological data indicate that designated uses are being attained in spite of projected or actual chemical-specific criteria exceedances, then additional site-specific analysis should be done to ensure that controls are developed that are necessary to adequately protect the water body from use impairment. Site-specific approaches could include mixing zone studies, more refined water quality modeling to support wasteload allocation, or the development of site-specific criteria. In any case, chemical-specific and toxicity criteria are proven and necessary bases of water quality-based effluent limits. In "reasonable potential" analysis, chemical-specific monitoring is usually focused on pollutant concentrations in the effluent and the projected ambient result of those concentrations being discharged. Thus, this type of analysis commonly yields projected rather than measured water quality impacts. Where biological impact is not detected using biological assessment methods, it is possible that impairment that is projected and plausible, may simply have not yet occurred. However, where discharges to a stream have been relatively constant over time and there has been ongoing biological assessment, this would be less of a concern. EPA's view is that it would be inappropriate to ignore projected impairment simply because the impairment has not yet been observed in the environment.

An additional argument in favor of retaining the independent application policy for "reasonable potential" determinations has to do with the suitability of certain types of data and the unsuitability of others for certain applications within the water pollution control program. For example, biological data are not amenable in the same way as chemical-specific data for use in waste load allocations, load allocations, total maximum daily load calculations or antidegradation reviews. An approach that would allow biological data to negate a finding of "reasonable potential" would suggest possible site-specific inadequacies of particular criteria without providing the information needed to determine definitively whether or not the criteria are appropriate or what any alternative criteria should be. As a consequence, a void would be created in the implementation of State or Tribal water quality standards which would render them unable to perform all of their

intended functions. Proponents of independent application contend that instead of discarding data and invalidating criteria where conflicting interpretations exist, an effort should be made to determine why the interpretations conflict and to refine the applicable criteria to better reflect the conditions found at the site. Taking this step would ensure that, over time, a full suite of appropriate criteria would be developed for every site and that all appropriate and necessary pollution controls are implemented. In addition, such an approach is consistent with the CWA. Some States and Tribes may be concerned, however, that revising water quality standards, especially where such revision is to deal with a single permitting decision, may be so resource intensive that it is not a realistic option.

As discussed above, if numeric water quality criteria exist and are applicable to a water body, permits for dischargers to the water body must ensure that those criteria are met under section 301(b)(1)(C) and the implementing regulations at 40 CFR 122.44(d). On occasion, States, Tribes and dischargers have asserted that biological and toxicity data from specific waters conflict with chemical data. EPA's current thinking is that instances of clear disagreement between biological and toxicity data and chemical data are infrequent. Based on this belief, EPA would not support a radical shift away from chemical criteria and limits or toxicity criteria and limits. Those tools are simply too important as proven tools for assessing potential impacts to surface waters and improving water quality. EPA's current thinking also suggests that it is important for there to be flexibility to resolve instances of disagreement between different forms of data and that perhaps mechanisms for such flexibility can be clarified or improved. EPA's current thinking is that through collection of broader and more thorough water quality data, EPA, States and Tribes will be able to develop more complete profiles of water body conditions and stressors and that through such evaluation the "necessary actions" (e.g., water quality-based effluent limits for one or more pollutants, listing of the water body as not attaining its aquatic life designated use, or best management practices to address nonpoint sources of pollution) to improve water quality in a given water will become more obvious.

Disagreement between biological, toxicity and chemical data for the same water is cited by some States and dischargers as a potential situation in which independent application would force unnecessary and burdensome requirements on dischargers. Those opposed to independent application of criteria would like to see States and Tribes given greater latitude to determine when limits based on a given criterion are necessary. They suggest that this could be achieved if States and Tribes were to include, in the chemical-specific criteria or toxicity criteria portions of their water quality standards, statements explaining circumstances under which the otherwise applicable criteria would not apply at a particular site or would have to undergo some review and revision, while assuring the designated use of the water body would be maintained. Such circumstances could include where the form of the pollutant in the effluent or receiving water is not the form addressed by the chemical criterion in the State or Tribe's standards; or, where a substantial amount of biological and or toxicity data indicate that discharges of the pollutant at levels that would exceed the chemical criteria are not causing the aquatic life use in a particular water body or segment of the water to be impaired. If these conditions could be met, permitting authorities would have the flexibility to determine that a numeric water quality-based effluent limit for the pollutant in question is not required, or that an alternate limit should apply. This type of flexibility, to rely on biological evaluations *in the criteria setting phase,* where data are sufficient to support such flexibility, could be a strong incentive for States and Tribes to develop stronger biological criteria and assessment programs including monitoring reference areas and complete chemical and toxicity monitoring programs, including site-specific data on most sensitive species to chemical(s) for which flexibility is being sought. EPA approval of water quality standards implementing such an option requires acceptance of an interpretation that sections 301(b)(1)(C) and 303(c)(2)(B) of the CWA allow States and Tribes to identify, within their water quality standards, conditions or circumstances which would render specific numeric criteria not applicable to certain waters in specific instances, or alternatively in need of refinement.

EPA has significant technical questions about how such an option could be implemented within the context of a State's or Tribe's water quality standards. EPA is especially interested in detailed technical comments describing how such an option would be included in a State's or Tribe's water quality standards, how such an option would ensure protection of designated uses in water bodies where criteria are deemed not applicable. In addition, EPA is soliciting comment on specific procedures that could be used by a State or Tribe to arrive at a decision that a criterion is not applicable at a specific site. In particular, EPA is interested in technical evaluations of what types of data would be necessary to support such a decision, the quantity and quality of the data and how the data would be evaluated. Finally, EPA seeks detailed technical comments indicating how other elements of the water quality standards program would function in situations where chemical or toxicological water quality criteria were adjusted based on biological assessments. For example, if a State or Tribe were to employ the option discussed above, it is not apparent how critical water quality program elements such as determining the need for permit limits or whether or not a new discharge could be allowed to a stream segment could occur absent chemical-specific or toxicity-based criteria applicable to the water body. To be workable, this option may need to be paired with a scientifically defensible mechanism for making decisions about activities such as permit limits and load increases. Since chemical criteria and chemical-specific interpretations of narrative criteria currently are the principal benchmark used for these functions, would pursuing the option discussed above be workable, or would it introduce a level of complexity into State and Tribal water quality standards that could result in slowed or suspended water pollution control programs, and expose aquatic ecosystems to greater risk because of the lack of an identified threshold of impact?

EPA's current thinking is that significant flexibility already exists within the current regulatory framework to account for available biological and toxicity data. For example, numeric criteria, once adopted, may be modified to better reflect conditions at a specific site. Bioassessment and toxicity data can play a valuable role in identifying sites where conditions differ sufficiently from those assumed in the calculation of the national or State or Tribe-wide criteria to warrant site-specific modification of the criteria. Bioassessment and toxicity data can also provide useful information in identifying instances where a given constituent in an effluent is toxicologically distinct from a similar substance for which a criterion is available, indicating the need for a separate criterion for the constituent in

question. Establishing site-specific criteria would provide relief similar to that contemplated in the option proposed above.

Lastly, public participation is a basic tenet of the water quality standards development process. Public participation is also sought in the context of issuing NPDES permits. During standards development, public input is sought to assist the regulatory agency in identifying the appropriate water quality goals for the waters under the jurisdiction of a State or Tribe. During NPDES permit issuance, public input is again sought to verify that the permit proposed to be issued is consistent with the water quality goals. Some assert that these two public participation steps seek input on different questions and are not interchangeable. Does the weight-of-evidence option discussed above reduce the opportunity for meaningful public participation in the standards setting process by making it more difficult for the public to determine which water quality criteria will apply to which water bodies, and, as a result, what the water quality goals for an individual water body are? EPA is considering how a weight-of-evidence approach might be implemented in a manner that does not restrict the opportunities for meaningful public participation in the water quality goal setting process.

Request for Comments on Independent Application

EPA requests comment on the following questions:

1. What is the rationale for modifying the independent application policy as it pertains to NPDES permitting? Under what circumstances could it be justified?

2. If there are circumstances where an approach other than independent application is acceptable, should any one type of water quality data receive greater weight and why?

3. How should States and Tribes evaluate effluent data generated using chemical, toxicity and biological methods in determining reasonable potential to cause or contribute to an impairment?

4. Would checks or oversight mechanisms be necessary to ensure that where decisions about reasonable potential are based on chemical, toxicity and biological methods, such decisions are made with integrity? For example, EPA or public oversight?

5. Are there any cases which indicate that either chemical-specific, whole effluent toxicity or biological approaches do not legitimately represent some aspect of use attainment?

6. Should EPA explicitly incorporate into the water quality standards regulation the independent application policy?

7. Should independent application be addressed the same or differently for permitting than for assessment and use attainment decisions under 305(b) reporting and 303(d) listing?

8. If EPA were to separate the use of independent application in determining the use attainment status of a water body from the use of independent application when determining reasonable potential for an effluent, what approach, independent application, weight-of-evidence, or hierarchical, should be used for use attainment decisions? NPDES permitting? What would the implications be if the programs used two different policies?

9. Would a policy allowing numeric criteria to not apply to all waters where supported by scientifically defensible data be workable? Would it unnecessarily complicate the regulatory program, for example by delaying the issuance of permits? Are existing mechanisms of criteria setting and permit issuance sufficiently flexible?

IV. Summary and Potential Program and Regulation Changes

EPA believes that the water quality standards program and decisions it yields will continue to be the focus of growing pressure and scrutiny as solutions to remaining surface water quality problems in this country are found to be increasingly elusive, difficult, and/or expensive. The task set forth by the Clean Water Act is to improve water quality even where it is difficult to do so. To accomplish this task, EPA envisions a national water quality standards program in which: the best possible information on whether designated uses are being attained and how to attain and maintain them is available and used; water quality criteria are selected from a wide-ranging menu of scientifically sound criteria and tailored to each watershed; and national norms of consistency and flexibility in State and Tribal water quality standards are clear.

With this vision in mind, EPA, through this ANPRM, begins a review of the water quality standards regulation in a public forum in an attempt to identify possible amendments to the regulation and new guidance or policy that may be needed to address three distinct objectives: (1) eliminate any barriers to, and otherwise enhance State and Tribal implementation of, watershed-based water quality planning and management; (2) facilitate use of new, more integrated water quality assessment and criteria science in water quality standards programs, and; (3) improve the regulation so that it can be implemented more efficiently and effectively (including cost-effectively).

The preceding pages of this ANPRM outline current regulatory provisions, accompanying guidance and policy, and current practices in the core areas of the water quality standards program. Each section of the ANPRM identifies issues that have been raised to EPA that come out of the collective experiences of States, Tribes, cities, industry and environmental advocates, as well as EPA's experience. The issue discussions are followed by specific questions that are intended to elicit focused comments. It is important for commenters to focus on these specific questions as a vehicle for developing comments. It is equally important for commenters to develop ideas that address the three objectives above in a more general sense and to identify the five to seven highest priority issues the commenter believes EPA should address in a follow-on regulatory proposal. EPA welcomes ideas on how the water quality standards regulation, policy and or guidance can be revised to facilitate water quality management on a watershed basis. In requesting comment on eliminating barriers to and facilitating implementation of watershed-based water quality planning and management, EPA directs commenters' attention primarily to the sections on designated uses, criteria, antidegradation, mixing zones and independent application. In requesting comment on how to facilitate use of new, more integrated water quality assessment and criteria science in water quality standards, EPA directs commenters' attention primarily to the sections on biological criteria, and independent application. In requesting comment on how to improve the efficiency and effectiveness (including cost-effectiveness) of the water quality standards program, all sections of the ANPRM are relevant for review.

EPA seeks a water quality standards program that protects the nation's waters as envisioned in the CWA, that establishes requirements that are necessary to attain and maintain healthy and sustainable ecosystems, and that is flexible enough for States and Tribes to protect water quality and at the same time avoid costly requirements that have little or no environmental benefit.

Below is a brief summary outline of the potential changes to the water quality standards program and

regulation that are discussed and considered in this ANPRM. The list of potential changes includes the potential changes to the program and regulation on which EPA is specifically requesting comment. Each area of potential change is discussed in detail in the specified section of the ANPRM. It is possible that EPA will ultimately propose some of the changes outlined below. It is also possible that EPA will conclude based on the public comments it receives that some or all of the issues presented in the ANPRM can be best addressed through non-regulatory mechanisms such as guidance or policy.

A. Uses

1. Refinement of use designations to achieve increased specificity in aquatic life and recreation uses being protected.
2. Minimum elements of a use attainability analysis (UAA).
3. When is UAA required/not required?
a. UAAs whenever an aquatic life use is designated (beyond fishable/swimmable) to see if the use reflects the highest potential for the water body.
b. Periodic review of marginal or limited aquatic life use designations.
c. When is a use considered attainable?
d. Conditions under which refinements in designated uses may be considered actions not requiring analysis to support use removal and alternatively the conditions under which such action is considered a use removal requiring justification under § 131.10(g).
e. Circumstances under which UAA is required and circumstances under which UAA must be reviewed.
4. Removal of designated uses.
a. Minimum aquatic life uses for all waters, because even degraded water bodies support some form of aquatic life.
b. Evaluate use removal provision at § 131.1(10)(g) allowing removal of a use due to the existence/operation of a dam.
c. Clarify whether the physical factors reason for removing a use includes removal of a recreational use due to poor physical access to the water. Alternatively, the removal of a use for physical factors could be limited to aquatic life uses only.
d. Clarify in § 131.10 that at least one of the six use removal criteria must be met to remove any use, not just aquatic life and recreation uses.
5. Alternatives to use downgrade such as variances, temporary standards and ambient-based criteria.
a. Recognize site-specific criteria set to natural background levels as a permissible alternative to use downgrade.
b. Recognize site-specific criteria set to irreversible anthropogenic background levels as a permissible alternative to use downgrade.

B. Criteria

1. Ambient Water Quality criteria for Aquatic Life Protection.
a. Examination and possible interim revisions to EPA recommendations on the duration and frequency of criteria excursions to account for organism response model and population response model.
2. Site-specific criteria and procedures.
a. Specify that States and Tribes must have regulatory procedures for establishing site-specific criteria.
b. Minimum requirements for development of site-specific criteria.
3. Narrative criteria and interpretation procedures.
a. Identify additional methods for implementation of narrative criteria.
b. Clarify that States and Tribes are required to adopt narrative criteria for all waters. (all States already have).
4. Codification of CWA requirement to adopt numeric toxics criteria.
a. Define "reasonable expectation" under 303(c)(2)(B). ("States and Tribes may adopt numeric chemical-specific criteria for those stream segments where the State or Tribe determines that the priority toxic pollutants for which EPA has issued CWA section 304(a) criteria guidance are present and can reasonably be expected to interfere with designated uses." emphasis added)
5. Chemical criteria beyond priority pollutants.
a. Develop and recommend or require criteria for certain non-priority pollutants.
6. Numeric values in the absence of criteria or data sufficient for criteria.
a. States and Tribes develop method for derivation of alternative values where minimum data requirements for criteria not satisfied. Specific EPA derivation procedure or guidelines.
7. Require or recommend that State and Tribes adopt numeric toxicity criteria.
8. Sediment quality criteria.
a. Require or recommend that States and Tribes adopt sediment criteria (narrative or numeric).
b. Specify in regulation that States and Tribes have the flexibility to adopt sediment quality criteria.
9. Biological criteria.
a. Require or recommend that States and Tribes adopt biological criteria (narrative or numeric).
b. Specify in regulation that States and Tribes have the flexibility to adopt biological criteria.
c. Specify linkage between biological criteria and stressor identification.
10. Wildlife Criteria.
a. Recognize in regulatory text that wildlife criteria are valid forms of water quality criteria.
b. Recognize in regulatory text that wildlife criteria endpoints other than bioaccumulation endpoints are valid bases for wildlife criteria.
11. Physical criteria: Existing and potential future role of.
a. Identify physical criteria such as habitat (including clean sediment) and hydrologic balance criteria in 40 CFR 131 as valid forms of criteria that States and Tribes can adopt in their water quality standards.
12. Human Health Criteria.
a. Higher fish consumption assumptions for site-specific or regional situations when subpopulations that are highly exposed have been identified.
b. Clarification of the use of MCLs and MCLGs in State and Tribal water quality standards.

C. Antidegradation

1. Minimum elements of State and Tribal antidegradation implementation procedures.
a. Revise regulation to include the minimum elements of a State and Tribal antidegradation implementation method.
b. Revise the regulation to explicitly say that State and Tribal antidegradation implementation procedures (in addition to just the policy) must be submitted in triennial review package and are reviewable by EPA.
2. Tier 1 protection (protection of existing uses).
a. Define or clarify what constitutes loss of an existing in-stream water use.
b. Specify that a clear approach to maintaining and protecting existing uses that may not be adequately protected by strict application of water quality criteria is a required element of an antidegradation implementation procedure.
3. Waters covered by tier 2 level protection.
a. Clarify waters subject to tier 2 level protection.
b. Clarify tier 2 provision requiring all cost effective and reasonable best management practices for nonpoint sources prior to allowing a lowering of water quality.
c. Clarify that States and Tribes are to consider the 303(d) listing status of a water body, and the information supporting that status, when determining whether a proposed activity that is expected to degrade water quality in that water body can be authorized under tier 2 of the State's or Tribe's antidegradation provisions.

4. Outstanding national resource water (ONRW) classification, level of protection, and public role in nominating.

a. Public nomination of ONRWs.

b. Level of protection afforded to ONRWs.

5. Creation of Antidegradation tier 2.5.

a. Revise the regulation to explicitly recognize tier 2.5 protection.

D. Mixing Zone Policy and Implementation Procedures

1. Specify that, to use mixing zones, States and Tribes must indicate in their water quality standards whether they allow mixing zones, conditions under which mixing zones are allowed, minimum requirements for mixing zones.

2. Procedures and decision criteria used in addressing complete and incomplete mixing.

3. Site-specific technical justification for rapid and complete mix assumption.

4. State and Tribe policies and procedures to address rate of mixing.

5. Clarify in regulation that narrative criteria apply in mixing zones.

6. Restrict Mixing zones for bioaccumulative chemicals of concern.

E. Applicability of Water Quality Standards to Wetlands

1. Clarify in 40 CFR Part 131 that wetlands with interstate commerce connection are waters of the U.S. requiring water quality standards.

F. Evaluation of EPA Policy of Independent Application (IA)

1. Increase use of chemical, toxicological, physical and biological data in making water body assessments in a consistent and scientifically defensible manner.

2. Specify how, and the circumstances under which, different forms of assessments (chemical, toxicological, physical and biological) can be used together to determine:

a. When a designated aquatic life use is or is not attained,

b. The type and value of criteria that should apply to a water, and

c. When water quality-based effluent limits are required in a permit.

3. Specify the adequate data base and level of rigor necessary in biological assessments to support a determination of full use support despite differences in assessment results.

In addition to the potential program and regulation changes outlined above, EPA is also requesting comment on the costs and benefits and potential reporting and record keeping requirements that might be associated with these changes. These issues are discussed more fully in the next section.

V. Regulatory Assessment Requirements

A. Executive Order (E.O.) 12866, Regulatory Planning and Review

Under Executive Order 12866, [58 **Federal Register** 51,735 (October 4, 1993)] the Agency must determine whether the regulatory action is "significant" and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

While this advance notice of proposed rule making establishes no regulatory requirements it could ultimately result in a rule that would satisfy one or more of the above criteria. It has therefore been determined that this action is a "significant regulatory action" under the terms of Executive Order (E.O.) 12866. As such this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations have been documented in the public record.

Under the terms of E.O. 12866, EPA is to prepare for any significant regulatory action an assessment of its potential costs and benefits. If that action satisfies the first of the criteria listed above, this assessment must include, to the extent feasible, a quantification of these costs and benefits, the underlying analyses supporting such quantification, and an assessment of the costs and benefits of reasonably feasible alternatives to the planned regulation. Because the purpose of this notice is to initiate a structured national debate on a broad set of issues rather than to propose specific regulatory changes, it is not feasible to quantify the costs and benefits of any resulting regulations at this time. The Agency is aware, however, that this notice could lead to a regulatory action for which the preparation of a quantitative assessment of costs and benefits would be appropriate. The Agency is thus requesting comment on the costs and benefits of any of the possible regulatory changes discussed in this notice, as well as on appropriate methodologies for assessing them. The Agency would be particularly interested to hear from States and Tribes that may already have experience implementing some of the measures discussed in this Notice and may already have prepared analyses of the costs and/or benefits of such measures. Other members of the public are also encouraged to submit any data they may have on the costs and benefits of specific measures (e.g., conducting biological assessments).

B. The Regulatory Flexibility Act (RFA) as Amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996

Under the RFA, (5 U.S.C. 601 *et seq.*), as amended by SBREFA, for proposed rules, EPA generally is required to conduct an initial regulatory flexibility analysis (IRFA) describing the impact of the regulatory action on small entities as part of rulemaking. However, under section 605(b) of the RFA, if the Administrator for the Agency certifies that the rule will not have a significant economic impact on a substantial number of small entities, EPA is not required to prepare an IRFA. The requirement applies to proposed rules only and as this notice is an ANPRM, these requirements do not apply to this notice.

C. Paperwork Reduction Act

Under the implementing regulations for the Paperwork Reduction Act, an agency is required to certify that any agency-sponsored collection of information from the public is necessary for the proper performance of its functions, has practical utility, is not unnecessarily duplicative of information otherwise reasonably accessible to the agency, and reduces to the extent practicable and appropriate the burden on those required to provide the information (5 CFR 1320.9). Any proposed collection of information must be submitted, along with this certification, to the Office of Management and Budget for approval before it goes into effect. Most of the potential regulatory changes discussed in this Notice could entail new reporting and record keeping requirements for States and Tribes and/or members of the regulated public. EPA

is interested in comments on any and all aspects of these potential paperwork requirements, and in particular on how they should be structured to fulfill the requirements that they have practical utility, are not unnecessarily duplicative of other available information, and are the least burdensome necessary to satisfy the purposes of the Water Quality Standards Program.

Dated: June 25, 1998.

Robert Perciasepe,

Assistant Administrator for Water.

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