

US EPA ARCHIVE DOCUMENT

Region VIII Guidance for Use Attainability Analyses for Aquatic Life Uses
(Draft: August, 1995)

Purpose

This guidance was prepared to respond to a number of policy and technical questions commonly associated with Use Attainability Analyses. This is not a "how to" document in the sense that it does not explain how to design and conduct the field investigations needed to support regulatory use attainability decisions. The technical "how to" documents needed for that purpose are listed in the *References* section of this guidance. This guidance is intended to respond to commonly asked policy and technical questions and to ensure that the required analyses address appropriate issues.

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 Clean Water Act (the so called "fishable/swimmable" uses). The factors to be considered in such an analysis include the physical, chemical, biological, and economic use removal criteria described in EPA's water quality standards regulation (40 CFR 131.10(g)(1)-(6)).

Regulatory Basis

EPA's water quality standards regulation (40 CFR 131.10(j)) establishes the requirement that States or Tribes conduct a use attainability analysis when either designating uses which do not include the "fishable/swimmable" uses or when designating new subcategories of the "fishable/swimmable" uses which require less stringent criteria.

Attainable Uses

Existing uses, by definition, are attainable and must be designated in water quality standards if they have not already been so designated [40 CFR 131.10(i) and 131.12(a)(1)]. Likewise, at a minimum, uses are considered attainable if they can be achieved by imposition of effluent limits required under Sections 301(b) and 306 of the Clean Water Act (Act) and cost-effective and reasonable best management practices for nonpoint source control. These existing use and technology requirements establish the regulatory floor for use designation, and therefore, the question of whether or not a use is attainable does not apply to those situations where either the use is existing or the use can be attained through application of Clean Water Act technology requirements and/or best management practices for nonpoint source control. Uses that can be attained by application of pollution controls more stringent than the minimums required in Sections 301(b) and 306 of the Act are, likewise, considered attainable unless one of the six factors listed in 40 CFR 131.10(g) can be satisfied.

When Must a UAA be Performed?

A State or Tribe must conduct a UAA whenever:

- (a) the State or Tribe designates or has designated uses that do not include the uses specified in Section 101(a)(2) of the Act. The "fishable/swimmable" uses are, therefore, assumed to be attainable, and the State or Tribe, through a UAA, must demonstrate the uses are *not* attainable.
- (b) the State or Tribe wishes to remove a *designated* use that is specified in Section 101(a)(2) of the Act or adopt subcategories of uses specified in Section 101(a)(2) of the Act which require less stringent criteria.

A UAA is inappropriate whenever:

- (c) designated uses are *existing* uses, or designated uses will be achieved by implementing Best Available Technology or secondary effluent limits for point sources and cost-effective and reasonable best management practices for nonpoint source control. At a minimum, *existing* uses must be maintained and designated in the water quality standards.

A UAA is not required whenever:

- (d) the State or Tribe designates uses specified in Section 101(a)(2) of the Act. That is, there is no UAA requirement for upgrading use classifications to include the "fishable/swimmable" uses.

What Should an Aquatic Life UAA Contain?

The UAA is focused on determining the potential (attainable) uses of a waterbody. As such, a UAA assesses the stressors limiting the potential uses and evaluates whether or not those stressors are controllable.

The UAA should answer the following questions:

- . what are the aquatic life uses currently being achieved in the waterbody?
- . what are the causes of any impairment in the uses - nonpoint, point and/or natural sources?
- . what aquatic life uses could potentially be attained based on the physical and biological characteristics of the waterbody if:
 - the nonpoint sources are controlled by reasonable and cost-effective [or State-required] BMPs?
 - the point sources are controlled beyond the minimally required BAT or secondary treatment?

- the controllable point and nonpoint sources were not present (i. e., how does the waterbody compare to an appropriate reference site or reference condition)?
- . what is the technical justification for the proposed change in use as a result of the waterbody assessment?

Or, to put it more succinctly:

- . what are the stressors limiting the use?
 - water quality?
 - habitat?
- . are those stressors controllable?

Data Requirements

A UAA need not, necessarily, require collection of new data. Appropriate existing data can form the basis for a UAA; however, any data used as the basis for attainability arguments must be scientifically defensible, i. e., collected using approved methods including appropriate QA/QC procedures. In addition, the data on which a proposed standards change will be based must appropriately reflect current conditions in the waterbody. It is the Region's position that, in most cases, UAA decisions should be based on a biological, chemical and physical survey that has been conducted on the waterbody in question within the last five years. This, of course, does not rule out reference to older data, but emphasizes that any contemplated standards revision must be based on current information about existing and potential uses for the waterbody.

Reporting the Results of an Aquatic Life UAA

The Region strongly recommends that a State or Tribe, contemplating a standards revision requiring a UAA, involve the EPA Regional Office at the planning stage. It is important to ensure that all parties involved in the proposed analysis are clear about the questions to be answered and to ensure the study design will provide the information needed to answer those questions. At a minimum, a *draft* UAA should be submitted to EPA before the standards revisions are proposed. The Regional Office will review the draft and provide its evaluation of the technical merit of the draft document. A *final* report should be made available prior to the public hearing if changes to the water quality standards are being proposed.

Aquatic Life Uses and Ephemeral Waterbodies

Assigning appropriate use classifications to flow-limited waters is a difficult task because that class of waterbodies spans such a great diversity of aquatic community types. As a result, the Region has attempted to identify, within our regulatory framework, aquatic life thresholds which might warrant different levels of protection in the water quality standards arena. This is not easy to do since aquatic communities form a continuum, making it difficult, if not impossible in a biological sense, to identify the threshold where "aquatic life begins." In

addition, aquatic communities that are able to cope with naturally harsh physical environments are often very sensitive to the toxicants in discharges to those waters. Despite these difficulties, the Region has, in the past, accepted a distinction between ephemeral waters and intermittent or perennial waters as one potential point of delineation for identifying differing levels of protection in establishing standards. We will, therefore, consider a distinction between ephemeral waters and intermittent or perennial waters as an acceptable justification for concluding an aquatic life use is not attainable. Any decision to apply a flow threshold such as this, however, must be made on a case-by-case basis since there are ecologically important ephemeral waters which should receive the highest level of protection regardless of the temporal nature of flow. This is especially true for many ephemeral wetlands.

[Note: where a continuous discharge to an ephemeral stream creates a "perennial" flow, compensating for the naturally ephemeral condition and enabling maintenance of an aquatic life use, then the "created" use is to be fully protected; see 40 CFR 131.10(g)(2)]

Fisheries vs. Aquatic Life Uses

Often proponents of a use removal will argue, in a UAA, that a particular waterbody is not a "fishery" because the waterbody naturally supports only minnows and/or aquatic invertebrates. The Region will not accept that argument as a basis for an aquatic life use removal or failure to designate an aquatic life use. As indicated above, the Region has allowed a level of protection distinction based on an ephemeral flow threshold. We will not approve, however, a level of protection distinction based on whether or not a waterbody supports or does not support a "fishery", implying a sport fishery. As explained in EPA's *Questions and Answers on Antidegradation*, the Agency considers the protection afforded by standards to focus on an appropriately representative aquatic community whether or not that community includes sport 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.

Ambient Water Quality Criteria

Frequently use attainability analyses issues become linked with site-specific criteria development. Although UAAs are not designed to address site-specific criteria development, it is difficult to separate the regulatory implications of the use and criteria issues. One site-

specific criteria issue often associated with use attainability analyses is criteria development based on "ambient" water quality concentrations. Ambient-based criteria are usually proposed for sites where the existing water quality (exceeding statewide water quality criteria) is perceived to be "natural" or, alternatively, resulting from "irreversible human-induced conditions." Sites where the local geology may result in naturally elevated concentrations of salts or minerals are those most often proposed as sites warranting "ambient-based" criteria. Examples of such sites in Region VIII include seleniferous shale areas which are sometimes associated with naturally elevated selenium concentrations and mineralized areas which may be associated with naturally elevated metals concentrations.

The Region believes there are sites where ambient-based criteria may be justified; however, as with any site-specific criteria adjustment, ambient-based criteria must be scientifically defensible. A key issue to be resolved for any such proposal, then, will be to identify and describe the existing water quality condition that is due to: 1) natural sources, 2) irreversible human-induced sources, and 3) controllable sources. The distinction among sources and the technical methods used in calculating numerical water quality values will be the focus of our review of proposed ambient-based criteria. The distinction among the causes of the elevated concentrations clearly will be a key issue in establishing the validity of proposed ambient-based criteria. For example, it is very likely that the natural (i.e., unaffected by man's activities) concentrations of metals in the waters draining mineralized areas were higher than those found in similar waters draining non-mineralized areas. However, it is unlikely that the existing metals concentrations in waters of historic mining districts is representative of those pre-mining, naturally mineralized concentrations. Similarly, there are numerous sites in the west where irrigation practices have elevated otherwise natural concentrations of selenium. Obviously, in either of these cases, proposals claiming those existing concentrations are entirely natural are insupportable.

A distinction between irreversible human-induced sources and controllable sources is likewise explicitly required. The criteria used to judge whether or not a source is, in fact, irreversible will be an important factor in our evaluation of the defensibility of proposed ambient-based criteria. For example, there are a number of areas in our Region with active remediation efforts underway where as little as five or ten years ago these sites were considered to be "irreclaimable" as the result of "irreversible" human-caused impacts (i.e., "irreversible" is a somewhat relative term, and it will be important to establish review criteria for reaching a conclusion on the irreversibility of the impacts). In addition to a distinction among the sources and whether or not those sources are controllable, the Region, in conducting its review of proposed ambient-based criteria, will focus on the adequacy of the baseline data and the statistical methods used to develop the proposed numerical values.

Definitions

- . *Designated Uses*: are those uses specified in water quality standards for each waterbody or segment whether or not they are being attained.
- . *Ephemeral Waterbodies*: are waterbodies that flow (streams) or contain (ponds and wetlands) water briefly only in direct response to precipitation in the immediate locality and whose channel is at all times above the local water table.
- . *Existing Uses*: are those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in water quality standards.
- . *Use Removal Criteria*: are the six factors listed in 40 CFR 131.10(g):
 - (1) naturally occurring pollutant concentrations prevent the attainment of the 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 hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or
 - (5) physical conditions related to the natural features of the waterbody, such as 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.

Agency Guidance (References)

- 1983 - Water Quality Standards Regulation (40 CFR 131) **
- 1983 - *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses* (this guidance specifically addresses streams and river systems)
- 1984 - *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses, Volume II, Estuarine Systems* (although specifically aimed at estuarine systems, there are some useful concepts applicable to this Region)
- 1984 - *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses, Volume III, Lakes*

- 1989 - *Rapid Bioassessment Protocols for Use in Streams and Rivers*
(EPA 444/4-89-001, May 1989)
- 1990 - *Biological Criteria: National Program Guidance for Surface Waters*
(EPA 440/5-90-004, April 1990) **
- 1990 - *Water Quality Standards for Wetlands: National Guidance*
(EPA 440/S-90-011, July 1990) **
- 1990 - *Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters*
(EPA 600/4-90/030, November 1990)
- 1993 - *Fish Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters*
(EPA 600/R-92/111, March 1993)
- 1994 - *Water Quality Standards Handbook, Second Edition*
(EPA 823-B-94-005a, August 1994)

OTHERS?

- ** Documents with this notation are included within the appendices of the *Water Quality Standards Handbook, Second Edition*; Appendix T of the Handbook also includes specific use attainability case studies