



Use Attainability Analyses and Water Quality Standards Variances

Overview

- 
- What is a UAA?
 - When is a UAA required?
 - How complex do they have to be?
 - What are other tools for “getting standards right” ?
 - What information does EPA have to help make and support defensible analyses ?

Review: Categories of Uses

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- Protection and Propagation of fish, shellfish and wildlife
 - Recreation in and on the water
 - Public Water Supply
 - Agricultural
 - Industrial
 - Navigation
 - Other Purposes



UAA MUST Be Conducted When: (40 CFR 131.10(j))

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- Designating uses that do not include CWA 101(a)(2) goals
 - Revising designated uses to remove 101(a)(2) goal uses
 - Adopting sub-categories of 101(a)(2) uses for specific water bodies which require less stringent criteria
 - A UAA is NOT necessary when establishing a sub-category structure



Definition Of UAA

40 CFR 131.3(g)

“ A Structured Scientific Assessment of the Factors Affecting the Attainment of the Use, Which May Include the Physical, Chemical, Biological, and Economic Factors as Described in 40 CFR 131.10(g)”

- Involves determining the feasibility of attaining the use in the future
- May be conducted by any individual or entity

Purpose(s) of a UAA

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- Meet the “fishable/swimmable where attainable” goals of the Act
 - Identify existing uses
 - Identify reasons attainment is “not feasible”
 - Identify “highest attainable” use
 - Establish a defensible rationale and record of decision when adopting a new or revised water quality standard for a waterbody



Is The Use "Attainable"?

(40 CFR 131.10(d))

At a minimum, a use is attainable IF:

- It is an existing use, OR
- It can be attained with:
 - 1) technology-based controls (sec. 301 and 306 of CWA) and,
 - 2) cost effective and reasonable best management practices for nonpoint source control.

No, IF

- Use not feasible due to any factor at 131.10(g)



Factors Preventing Attainment Of A 101(a)(2) Use That Is Not An Existing Use (40 CFR 131.10(g))

1. Naturally occurring pollutant concentrations,
2. Natural low flow conditions or water levels,
3. Human caused conditions or pollutant sources,
4. Dams or other hydrologic modifications,
5. Natural physical conditions for aquatic life,
6. Substantial and widespread economic and social impact.

40 CFR 131.10(g)

- g) States may remove a designated use which is not an existing use, as defined in § 131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is **not feasible** because:
- 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 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**

40 CFR 131.10(g) (cont.)

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- 4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body 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 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 Complexity of a UAA can depend on Site Specific Conditions:

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- Amount of Data Available
 - Degree of Accuracy and Precision Desired
 - Size of the Resource
 - Value of the Resource to the Community
 - Degree of Change from current designation
 - Degree of Change from 101 (a) goals



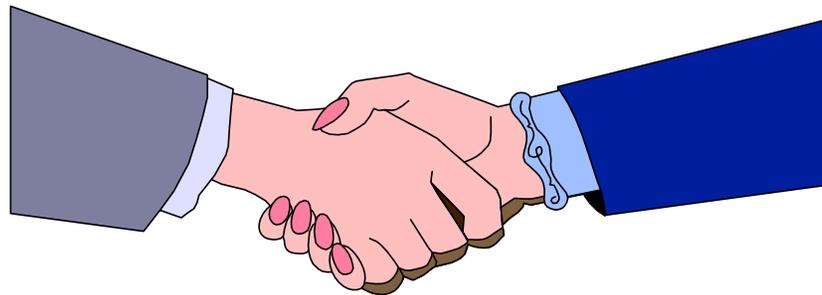
Guiding Principle Of A UAA (1) 40 CFR 131.20(b)

INVOLVE local, State and Federal entities and the public.

- States and authorized Tribes must hold a public hearing
- Supporting analyses must be made available prior to the hearing.

Guiding Principle (2)

REACH AGREEMENT with all involved parties on the data to be collected, analyses to be conducted and the bases on which to interpret the information BEFORE initiating the analyses and keep everyone informed throughout the process.



UAAs: Don't forget...

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- Any (revised) water quality standards shall provide for the attainment and maintenance of water quality standards in downstream waters (40 CFR 131.10(b))
 - If seasonal criteria are adopted, such criteria shall not preclude the attainment and maintenance of a more protective use in another season (40 CFR 131.10(f))

What's Next?

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- The STATE or TRIBE evaluates the information, makes a determination on an appropriate use.
 - The PUBLIC evaluates the analyses, the State's determination of attainability, and the proposed use.
 - The STATE or TRIBE adopts the use
 - EPA reviews, approves or disapproves.
 - The STATE or TRIBE gives an opportunity for review of non-101(a) designations every 3 year (40CFR131.20)

UAAs: Take Home Messages



- A designated use can be removed if:
 - it is not an existing use, *and*
 - implementation of tech. based limits and cost effective and reasonable BMPs would not result in attainment, *and*
 - attaining the use is “not feasible” because of at least 1 of the factors at 40 CFR 131.10(g)
- A UAA is required when designating uses or sub-categories that do not protect 101(a)(2) uses
- Agreement between all involved parties on what and how much information is needed and how it will be interpreted is a key factor in successful UAAs



Water Quality Standards Variances: Basis

- 40 CFR 131.13: " States may, at their discretion, include in their state standards policies generally affecting their application and implementation, such as mixing zones, low flows and variances. Such policies are subject to EPA review and approval"

Variance: What we mean (1)

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- A temporary modification to the designated use and associated water quality criteria that would otherwise apply
 - based on a use attainability demonstration
 - targets achievement of the highest attainable use and associated criteria during the variance period

Variance: What we mean (2)

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- *A time limited* use and criteria for a specified:
 - Pollutant(s)
 - Permittee(s) and / or
 - Water bodie(s)...
 - that reflects the highest attainable interim use and interim criterion during the specified time period

Variance: Purpose (1)

- Identify and limit the applicability of a alternative designated use and associated criteria to be met during the term of the variance
 - All other applicable water quality standards not specifically modified by the variance remain applicable

Variance: Purpose (2)

- Appropriate when a designated use is not attainable in the short-term, but might be attainable in the long-term
 - A way to retain an underlying designated use in the long term while addressing specific challenges to attainability in the near term
- Variances may be utilized to:
 - Recognize that Limiting Conditions May Change
 - Implement Controls to Make Feasible Progress
 - Conduct Additional Studies

Factors Supporting Variances

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- Naturally occurring pollutant concentrations prevent attainment
 - Natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment, unless these conditions may be compensated...
 - Human caused conditions prevent attainment of the use and cannot be remedied...

Factors Supporting Variances (Continued)

- Dams, diversions or other types of hydrological modifications preclude attainment of the use, and it is not feasible to restore the waterbody ...or operate such modification in a way that would result in attainment...
- Physical conditions related to natural features of the waterbody and unrelated to water quality preclude attainment of aquatic life protection uses
- Controls more stringent than those required by Sections 301 (b) and 306... would result in substantial and widespread economic and social impact

Variations: Approvability

- EPA has approved individual variations when they are:
 - Included in the WQS
 - Demonstrate that standard is unattainable by 131.10
 - Subject to public notice and opportunity for comment
 - Protective of existing uses
 - Demonstrate that advanced treatment and alternative effluent control technologies have been considered
 - Secure the highest attainable level of water quality, short of achieving the standard
 - Do not exempt technology based requirements

Variations: Guidance

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- Variance Policies and individual variations should:
 - Ensure existing criterion is binding on discharges not covered by the variance
 - Ensure other applicable criteria will be met
 - Be for a specific time and reviewed every 3 years
 - Be established as close to original criteria as possible
 - Ensure reasonable progress is made toward meeting the standard
 - Ensure that upon expiration, original criteria have full effect

Variance "Cautions"

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- Same term used in other laws and regulations, but not the same meaning
 - Must provide an opportunity for a public hearing
 - CAN be linked to an NPDES permit action
 - Must be identifiable in standards
 - Are not the basis of attainment decisions under 303(d)

Variations And Other "Tools"

- **Compliance Schedules**
 - Must be authorized in WQS for use in NPDES permits
 - Timetable in permit to meet criteria
- **Variations**
 - Time limited change in Designated Use
 - Time limited change in accompanying criterion
- **Site Specific Criterion**
 - No change in Designated Use
 - Permanent change in Criterion
- **Use Reclassification**
 - Permanent change in Designated Use
 - Criteria also change to protect use

Variations: Take Home

- Time limited
- Generally pollutant-specific
- Provide an alternative to use removal
- Basis for enforceable permit limits
- Established by States/Tribes
- Approved/Disapproved by EPA
- Subject to public review
- Incorporated into Water Quality Standards
 - Individual variations identified
- Analysis similar to UAAs (see 131.10(g))



UAAs and Variances: EPA Guidance (More Recent)

- UAAs and Other Tools for Managing Designated Uses,
- <http://water.epa.gov/scitech/swguidance/standards/uses/uaa/info.cfm>

(Click on "Case Studies")



UAAs and Variances: More EPA Guidance: (Less Recent)

- Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses (EPA 440/4-86-037, 038, 039)
- Interim Economic Guidance for Water Quality Standards: Workbook (1995): EPA 823/B-95-002
- <http://water.epa.gov/scitech/swguidance/standards/economics/index.cfm>
- Advanced Notice of Proposed Rule Making: Water Quality Standards Regulation: 63 FR 36742, July 7, 1998. EPA 823Z-98-002
<http://www.epa.gov/fedrgstr/EPA-WATER/1998/July/Day-07/w17513.htm>



Site Specific Criteria: More EPA Guidance

- *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background* Memo to Water Management Division Directors Regions 1-10 et al., Tudor T. Davies, Director, Office of Science and Technology, November 5, 1997

http://water.epa.gov/scitech/swguidance/standards/upload/2009_01_29_criteria_naturalback.pdf



UAAs: The Regions weigh in...

- EPA Region 10 Natural Conditions Workgroup Report on Principles to Consider When Reviewing and Using Natural Conditions Provisions. Version 1 April 2005



UAAs: Guidance from States

- **Recreational Use Classification Guidance (Version 1.1).** January 2003. Colorado Department of Public Health and Environment, Water Quality Control Division. Available at:
http://www.cdphe.state.co.us/wq/Assessment/assessment_practices_and_methods.htm
- **State of Kansas: Aquatic Life Use UAA Protocol**
Available at:
<http://www.kdhe.state.ks.us/befs/uas/UAAGuidance.pdf>

UAAs: Other Information



- Water Environment Research Federation:

Exploring Use Attainability Analyses (2005)

Factors for Success in Developing Use
Attainability Analyses: Final Report (2007)
- <http://www.werf.org>

UAAs: Some Examples

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- Chesapeake Bay
 - <http://www.chesapeakebay.net/>
 - New York Harbor - Use and Standards Attainment
 - <http://www.nyc.gov/>
 - Long Island Sound
 - <http://www.longislandsoundstudy.net/>
 - Charles River CSOs
 - <http://www.mwra.state.ma.us/03sewer/html/sewcso.htm>

UAA Case Studies

- Simplified formats for presenting UAA data and recommendations
 - *Kansas and New York UAA Worksheets*
- Data collection and analyses from in-depth UAAs
 - *Valley Creek, Alabama UAA*
 - *New York Harbor Complex UAA*
 - *Alaska Red Dog Mine UAA*
 - *Chesapeake Bay UAAs*
- Alternatives to long-term removal of designated uses
 - *Suspension of Recreational Beneficial Uses in Engineered Channels During Unsafe Wet Weather Conditions*
 - *Montana's Temporary Water Quality Standards*
 - *Chesapeake Bay Restoration Variance*

Case Study: Chesapeake Bay UAAs

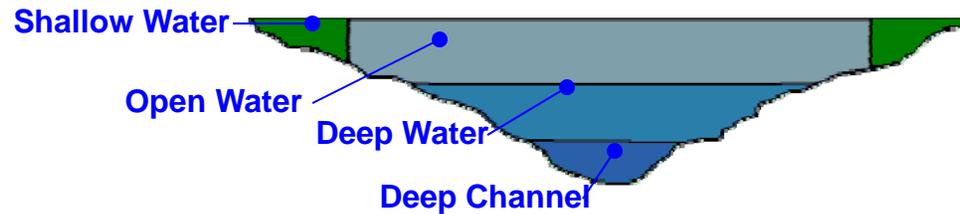
- Chesapeake Bay waters impaired by nutrient and sediment from point and nonpoint sources
 - Impairment has led to low dissolved oxygen and inability to meet designated uses
- 131.10(g) factors 2, 3, and 6
- MD collected monitoring data and developed a model to see if waters were meeting uses
- Based on UAAs, 5 refined aquatic life uses were chosen

Case Study: Chesapeake Bay

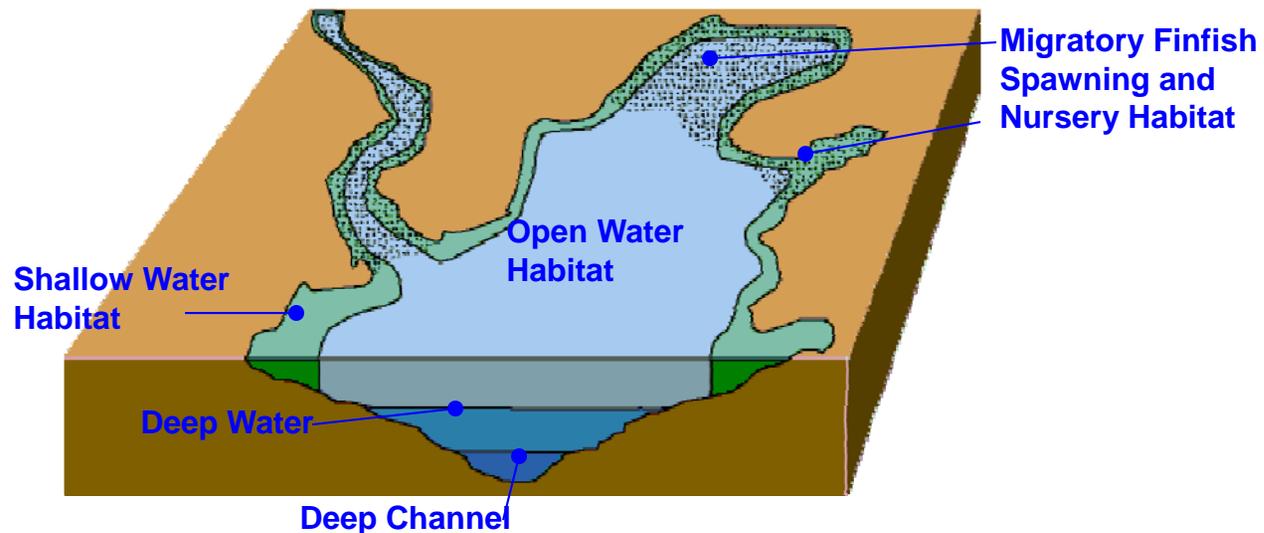
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- The uses (habitat zones) are based on the habitat needs of the Bay's living resources:
 - Migratory Spawning and Nursery Habitat
 - Shallow Water Habitat
 - Open Water Habitat
 - Deep Water Habitat
 - Deep Channel Habitat

UAA Example: Chesapeake Bay

A. Cross Section of Chesapeake Bay or Tidal Tributary



B. Oblique View of the “Chesapeake Bay” and its Tidal Tributaries



Office of Science and Technology

Variations Case Study: GLI

- Discharger and pollutant specific
- Does not apply to new dischargers
- Cannot “likely jeopardize” listed species
- 5 year maximum
- Based on any 40 CFR 131.10(g) factor
- Demonstration that variance complies with state/tribal antidegradation requirements
- Demonstration that any increased risks to human health/environment are consistent with protection of public health, safety and welfare
- Detailed review and approval procedures