Use Attainability Analysis Guidance

State of Idaho

Department of Environmental Quality

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Cover photo: North Fork Clearwater River in 2016. Picture taken by Brian Reese.

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Abbreviations, Acronyms, and Symbols

§ 303(d)	refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section
§	section (usually a section of federal or state rules or statutes)
BAG	basin advisory group
BMP	best management practice
BURP	Beneficial Use Reconnaissance Program
CFR	Code of Federal Regulations (refers to citations in the federal administrative rules)
COLD	cold water aquatic life (use designation)
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
DWS	domestic water supply
EMAP	Environmental Monitoring and Assessment Program
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
HAU	highest attainable use
HUC	hydrologic unit code
IDAPA	Refers to citations of Idaho administrative rules
IDWR	Idaho Department of Water Resources
IPDES	Idaho Pollutant Discharge Elimination System
MOD	modified aquatic life (use designation)
NPDES	National Pollutant Discharge Elimination System
PCR	primary contact recreation
QAPP	quality assurance project plan
RBP	rapid bioassessment protocol
SCR	secondary contact recreation
SS	salmonid spawning
TMDL	total maximum daily load
UAA	use attainability analysis
US	United States
WAG	watershed advisory group
WARM	warm water aquatic life (use designation)
WBAG	Water Body Assessment Guidance
WBID	water body identification number
WERF	Water Environment Research Foundation

Executive Summary

The following guidance is to help Idaho Department of Environmental Quality (DEQ) staff in the process of developing a use attainability analysis (UAA) and steps required to complete the process. This is also guidance for stakeholders who are interested in developing an UAA, however they will need to work directly with DEQ throughout the process and DEQ will facilitate consultation with the Environmental Protection Agency (EPA).

A UAA is a structured scientific assessment of the beneficial aquatic life and recreational uses that are attainable for a water body. The UAA forms the basis for designating uses for a water body by adding or changing a beneficial use designation.

CWA § 101(a)(2) states that water quality should provide for the protection and propagation of fish, shellfish, and recreation in and on the water, wherever attainable. This interim goal is the basis for the aquatic life (also referred to as the fishable) and contact recreation (swimmable) goals of the CWA. In Idaho there are several categories of fishable and swimmable beneficial uses to be protected. These § 101(a)(2) beneficial use categories are the ones that require a UAA in order to be changed.

Designating a beneficial use sets in rule the expected use of a water body and defines the expectations of a waterbody to support aquatic life communities and recreational uses. Each water body has existing and potentially designated beneficial uses. Existing uses are those that have been actually attained by a water body on or after November 28, 1975 (40 F.R. 55340-41, November 28, 1975), even if that use is no longer attained or supported. In Idaho, for waters where beneficial uses are not designated in rule, the cold water aquatic life and contact recreation uses are presumed to occur, and their criteria are applied to protect a water body for those uses (IDAPA 58.01.02.101.01).

The UAA process, through collecting data on the water body (e.g., stream temperature and ecological community composition) and locating documents and sources describing historic conditions, identifies and documents a water body's existing beneficial uses and whether natural or human-caused sources of pollution or impairment preclude attainment of any designated uses. Identifying and quantifying as many of these influences as possible leads to a more complete understanding of the water body and the ecological system as a whole. This information is used to identify the uses that are attainable by improving the water quality in a water body.

The UAA is not a quick-and-easy process; it requires a significant amount of time to complete. Before beginning the UAA, interested parties should discuss the UAA's purpose with the Idaho Department of Environmental Quality (DEQ) and the US Environmental Protection Agency (EPA) to determine if a UAA is necessary. If the desired outcome is changing designated uses to ease effluent limits, DEQ and EPA can help explore alternatives, such as variances and compliance schedules, that allow more time to meet prevailing criteria.

Uses are considered attainable if they are achievable after imposing effluent limits and implementing cost-effective and reasonable best management practices (BMPs) for nonpoint

source control (40 CFR 131.10(d) and 40 CFR 131.10(h).2). The UAA must determine not just the cause for beneficial use nonattainment but also identify the pollution controls currently in place, any cost-effective controls that can be implemented, and the expected outcome. The highest attainable use of the water body, as identified in the UAA, should become the designated use.

If the UAA supports a designated use change or addition, rulemaking must be initiated. Administrative review involves approval of the proposed use change by the Idaho Board of Environmental Quality, Idaho Legislature, and EPA.

1 Introduction

In 1972, the US Congress passed the Federal Water Pollution Control Act, which became formally known as the Clean Water Act (CWA) in 1977. The CWA was passed to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The CWA § 101(a)(2) established "…the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved…" (referred to as the "fishable and swimmable" goals).

EPA assumes the dominant role in defining and directing water pollution control programs across the nation. DEQ has primary authority for implementing CWA programs with EPA oversight and certifying that all CWA requirements are met in the state. CWA § 303 requires DEQ to adopt water quality standards and review those standards every 3 years.

Idaho's water quality standards have three main components: beneficial uses, water quality criteria, and antidegradation policy. Beneficial uses are assigned to water bodies to define the expected use of a given water body. When the designated beneficial uses are unattainable, the method for changing those uses is the UAA. The phrase "wherever attainable" in CWA § 101(a)(2) is the basis for the UAA. UAAs are codified in Idaho Code § 39-3604 and § 39-3607 and in IDAPA 58.01.02.050.02 (a), which states "Wherever attainable, surface waters of the state shall be protected for beneficial uses which for surface waters includes all recreational use in and on the water surface and the preservation and propagation of desirable species of aquatic life."

2 Beneficial Use Designation

CWA § 101(a)(2) states that water quality should provide for the protection and propagation of fish, shellfish, and recreation in and on the water, wherever attainable. This interim goal is the basis for the aquatic life (also referred to as the fishable) and contact recreation (swimmable) goals of the CWA. In Idaho, there are several categories of fishable and swimmable beneficial uses to be protected.

A water quality standard defines the water quality goals for a water body, or a portion of a water body, in part by designating the waters' use. The beneficial use of a water body must consider its actual use, the ability of the water to support a future use that is not currently supported, and the basic goal of the CWA that all waters support aquatic life and recreation where attainable. Idaho must designate its uses accordingly.

Beneficial uses are "any of the various uses which may be made of the water of Idaho, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetic" (IDAPA 58.01.02). Beneficial use designation starts with identifying the existing use of the water body (between November 28, 1975, and the present) and the ability of the water body to support a use now or in the future. The use of water for wastewater dilution or as a receiving water for a waste treatment facility effluent is not a beneficial use. 2.1.

Existing does not necessarily mean the use is occurring now. _Existing_ means a use has been supported at any time on or after November 28, 1975, and the water body has met the requisite water quality. To determine if a use is existing, ask (1) has it or is it taking place? and (2) were water quality criteria met when it did take place?

To the extent that designating beneficial uses may affect numeric or narrative criteria, Idaho must maintain a level of water quality into downstream waters that provides for the attainment and maintenance of another state's or tribe's water quality standards (IDAPA 58.01.02.070.08). While a water body may have competing beneficial uses, federal law requires DEQ to protect the most sensitive of the beneficial uses. Idaho evaluates the suitability of a water body for beneficial uses based on:

- Physical, chemical, and biological characteristics
- Geographical setting and scenic qualities
- Economic and public values

As described in section 2.3.32.3.3, many Idaho streams do not have fishable/swimmable uses designated. Designating beneficial uses for the first time and changing designated uses through a UAA require similar data to assess and determine a water body's existing and potential uses.

2.1 Beneficial Use Categories

CWA § 101(a)(2) states that water quality should provide for the protection and propagation of fish, shellfish, and recreation in and on the water, wherever attainable. This interim goal is the basis for the aquatic life (also referred to as the fishable) and contact recreation (swimmable) goals of the CWA. In Idaho there are several categories of fishable and swimmable beneficial uses to be protected. These § 101(a)(2) beneficial use categories are the ones that require a UAA when changing a designated use to one with less stringent criteria.

2.1.1 Aquatic Life Use

To reflect the natural gradient of Idaho's waters as they flow from the mountains toward the Pacific Ocean, the aquatic life use designations include subcategories: cold water aquatic life (COLD), warm water aquatic life (WARM), and modified aquatic life (MOD). These uses are mutually exclusive—only one can apply to a given water body.

2.1.1.1 Cold Water Aquatic Life

Waters designated for cold water aquatic life should sustain and protect a viable cold water aquatic life community for cold water fish and/or macroinvertebrate species that prefer colder temperatures (IDAPA 58.01.02.100.01.a).

Salmonid spawning (SS) use is a subcategory of aquatic life, although it is often treated as a subcategory of cold water aquatic life. Waters that provide, or could provide, a habitat for self-propagating populations of salmonid fish species must be protected for salmonid spawning (IDAPA 58.01.02.100.01.b). The SS use is considered a more protective subcategory of cold water aquatic life and is listed under "Cold Water" in the use-specific criteria in IDAPA 58.01.02.250. SS may occur as an existing use in water bodies with COLD use designations; it is not limited simply to those waters designated for spawning. However, it is important to understand that SS use is a seasonal subcategory of aquatic life and would not be designated in the absence of a broader aquatic life use. SS use adds a seasonal layer of more protective temperature and dissolved oxygen criteria to the broader aquatic life use.

2.1.1.2 Warm Water Aquatic Life

Waters designated as suitable for WARM use should have water quality appropriate for protecting and maintaining a viable warm water aquatic community (IDAPA 58.01.02.100.01.d).

2.1.1.3 Modified Aquatic Life

MOD use protects "water quality for an aquatic life community that is limited due to one or more conditions set forth in 40 CFR 131.10(g), which preclude attainment of reference streams or conditions" (IDAPA 58.01.02.100.01.e):

1. Naturally occurring pollutant concentrations prevent attaining the use.
2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent attaining the use, unless these conditions may be compensated for by discharging a sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.
3. Human-caused conditions or sources of pollution prevent attaining the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
4. Dams, diversions, or other types of hydrologic modifications preclude attaining 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 attaining the use.
5. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, and riffles, unrelated to water quality, preclude attaining aquatic life protection uses.
6. Controls more stringent than those required by CWA § 301(b) and § 306 would result in substantial and widespread economic and social impact.

Unlike the other aquatic life uses, currently no criteria are associated with the MOD use in Idaho's water quality standards. Instead, water quality criteria for MOD use are determined on

a case-by-case basis and must be sufficient to protect the existing community (IDAPA 58.01.02.250.05). Currently no water body units are designated for MOD use.

2.1.2 Contact Recreational Uses

In Idaho, the contact recreation use is divided into two subcategories: primary contact recreation (PCR) and secondary contact recreation (SCR) (IDAPA 58.01.02.100.02). The water quality criteria are the same and presuming PCR over SCR makes no difference for determining the applicable criterion (DEQ 2016, section 3.2.3). Waters used or suitable for PCR are also suitable for SCR activities such as fishing; however, as the more protective use, PCR would be considered the existing use assigned to waters where both subcategories are existing uses.

Contact recreation (primary or secondary) is a designated use for "water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur." These activities may include swimming, water skiing, or skin diving (IDAPA 58.01.02.100.02.a).

SCR is a designated use for waters in which people engage in activities where immersion in the water body is unlikely and ingestion of water is unlikely to occur. These activities may include fishing, boating, wading, and infrequent swimming (IDAPA 58.01.02.100.02.b).

2.2 Non-CWA § 101(a)(2) Beneficial Use Categories

Idaho has other uses associated with water in its rules; however, the federal regulations requiring UAAs does not cover or regulate these other uses.

2.2.1 Water Supply

Water supply uses include domestic water supply, agricultural water supply, and industrial water supply. Agricultural and industrial water supply beneficial uses are designated for all Idaho water bodies (IDAPA 58.01.02.100.03).

2.2.2 Wildlife and Aesthetics

Wildlife and aesthetics beneficial uses apply to all surface waters of the state (IDAPA 58.01.02.100.04 and 100.05).

2.3 Beneficial Use Status

Multiple categories of beneficial uses address different parts of the CWA (e.g., aquatic life and recreation), and every water body has existing or designated beneficial uses Table 11. Waters that have not yet received beneficial use designations must be protected at a level commensurate with cold water aquatic life and primary or secondary contact recreation beneficial uses.

Table 11. Idaho's beneficial uses of water for CWA purposes (IDAPA 58.01.02.100).

Beneficial Use Category	Subcategory	Water Quality Standards Abbreviation
Aquatic life	Cold water[a]	COLD
	Salmonid spawning	SS
	Warm water	WARM
	Modified	MOD
Recreation	Primary contact[a]	PCR
	Secondary contact	SCR
Water supply	Domestic	DWS
	Agricultural[b]	
	Industrial[b]	
Wildlife habitats[b]		
Aesthetics[b]		

a. The criteria for cold water aquatic life and primary or secondary contact recreation apply until beneficial uses are officially designated.
b. Designated for all Idaho water bodies
Note: domestic water supply (DWS).

2.3.1 Existing Use

Existing beneficial uses are uses that have been actually attained in or on a water body on or after November 28, 1975, even if it no longer occurs. Existing beneficial uses of waters of the state must be protected (even when not designated) and, because an existing use has been actually attained, the use cannot be changed, downgraded, or removed.

2.3.2 Designated Use

A designated use has been adopted into Idaho's water quality standards (IDAPA 58.01.02.100–160) as the beneficial use in a water body that must be protected. Designated uses reflect past water body conditions, current water body conditions, or conditions that are a reasonable goal for the water body. The current designated uses for a water body should be determined before beginning the UAA process.

2.3.3 Presumed Use Protection

Following the CWA (101(a)(2)) goal that all waters are *fishable and swimmable*, Idaho water bodies not officially designated in IDAPA 58.01.02.110–160 must be protected for cold water aquatic life and contact recreation. Although referred to as providing "presumed use protection," it is more accurately described as applying the criteria protective of cold water aquatic life and primary or secondary contact recreation until a review of the water body indicates the most appropriate beneficial uses for the water body.

3 Use Attainability Analysis

A UAA is a process that evaluates and potentially changes a water body's designated use, or use subcategory, and incorporates those changes into the state's water quality standards. In the *Introduction to Water Quality Standards* (EPA 1999), EPA defines a UAA as consisting of a water body survey and assessment, as well as an economic analysis if appropriate. The UAA should answer the following questions about the condition of the water body:

1. Identify the water body of interest.
2. Determine the designated versus existing uses.
3. Consider UAA alternative.
4. Are the designated uses being attained? If not, why?
5. To what extent does pollution contribute to the impairment of the use?
6. What point and nonpoint source controls are necessary to restore or enhance the use?
7. If controls will not restore the use, what is the highest attainable use possible for the water body?

A UAA is authorized by federal regulation and allows states to change or remove designated uses that are not existing uses, or to establish subcategories of uses if the state can demonstrate that attaining the designated use is not feasible for one or more of the following reasons from IDAPA § 58.01.02.102.02:

1. Naturally occurring pollutant concentrations prevent attaining the use.
2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent attaining the use, unless these conditions may be compensated for by discharging a sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.
3. Human-caused conditions or sources of pollution prevent attaining the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
4. Dams, diversions, or other types of hydrologic modifications preclude attaining 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 attaining the use.
5. Physical conditions related to the natural features of the water body such as the lack of a proper substrate cover, flow depth, pools, and riffles, unrelated to water quality preclude attaining aquatic life protection uses.
6. Controls more stringent than those required by CWA § 301(b) and § 306 would result in substantial and widespread economic and social impact.

Situations exist where the beneficial use may not be changed. Designated beneficial uses that are existing uses, meaning they have been attained in or on the water body since November 28, 1975, can only be changed to a use with more stringent criteria. The state may also not remove beneficial uses where the use may be attained by implementing effluent limits required under CWA § 301(b) and § 306 and cost-effective and reasonable BMPs for nonpoint source control (40 CFR 131.10 (g)–(j)).

Steps for determining the need for a UAA and for developing a UAA are:

1. Identify the water body of interest
2. Determine the designated uses versus existing uses
3. Consider UAA alternatives
4. UAA study plan development
    a. Quality assurance project plan (QAPP)
    b. Data collection and monitoring plan
    c. Public involvement plan
5. Beneficial use data collection
    a. Document existing uses
    b. Reasons for unattainability and nonattainment
    c. Document highest attainable use
6. UAA submittal
7. Administrative review

The following sections go into further details about each of these steps and provide guidance for completing them. Appendix A provides a handout that addresses questions about UAAs.

4 Identify Water Bodies of Interest

Identifying the water body of interest is the first step in deciding if a UAA is appropriate and will define and determine the overall UAA process. An appropriate water body definition is necessary to develop the UAA and to ensure any resulting use change is approvable. Idaho designates beneficial uses at the water body identification (WBID) level to all water within a water body unit—uses do not vary by assessment unit within a water body unit.

The United States is divided and subdivided into successively smaller hydrologic units that are classified into four levels: regions, subregions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system (USGS 2020). The *Water Body Assessment Guidance* (WBAG) contains a detailed discussion of water body identification (DEQ 2016, section 2).

In the UAA, data must be relevant and scientifically rigorous. To determine relevance, DEQ applies the following:

1. Data must relate to a water quality standard, or beneficial use; and
2. Data must be georeferenced to a particular site on a particular water body.

For the data to be relevant, it must be accompanied by a geographic location description, with latitude and longitude (in decimal degrees or degrees, minutes, seconds); a specific map produced with geographic information system software (e.g., ArcMap or Google Earth); and a written description of the landmarks defining the upstream and downstream extents of the water body.

5 Determine the Designated Uses versus Existing Uses

Once delineated, determine the designated uses for the water body by checking IDAPA 58.01.02.110–160. The designated aquatic life and recreation uses are found in the right-hand columns of the tables (IDAPA 58.01.02.110 – 160; see Table 2 for example designations table). All named and unnamed tributaries within each WBID level are assigned the same beneficial uses. Table 2 shows how WBID levels and use designations appear in rule.

For waters without aquatic life or recreation use designations, the cold water aquatic life (COLD) and primary contact recreation (PCR) or secondary contact recreation (SCR) criteria apply until beneficial uses are officially designated (IDAPA 58.01.02.101.01.a). In some instances, aquatic life and contact recreation beneficial use designations have been identified as NONE. This means there is no aquatic life or contact recreation use that could be attained in that water body. Bucktail Creek (S-9) and Blackbird Creek (S-12b) are the only examples of water bodies where use designations were removed due to human-caused conditions that cannot be remedied at this time and are labeled NONE in the table.

Table 22. Example of use designation in IDAPA 58.01.02.110–160 for the Middle Salmon-Panther Creek subbasin.

IDAHO ADMINISTRATIVE CODE
Department of Environmental Quality

IDAPA 58.01.02
Water Quality Standards

05. **Middle Salmon-Panther Subbasin**. The Middle Salmon-Panther Subbasin, HUC 17060203, is comprised of eighty-eight (88) water body units.

Unit	Waters	Aquatic Life	Recreation	Other
S-1	Salmon River - Panther Creek to Middle Fork Salmon River	COLD SS	PCR	DWS SRW
S-2	Panther Creek - Big Deer Creek to mouth	COLD SS	SCR	
S-3	Garden Creek - source to mouth			
S-4	Clear Creek - source to mouth			
S-5	Big Deer Creek - South Fork Big Deer Creek to mouth			
S-6	Big Deer Creek - source to South Fork Big Deer Creek			
S-7	South Fork Big Deer Creek - Bucktail Creek to mouth			
S-8	South Fork Big Deer Creek -source to Bucktail Creek			
S-9	Bucktail Creek - source to mouth	NONE	NONE	
S-10	Panther Creek - Napias Creek to Big Deer Creek	COLD SS	SCR	
S-11	Panther Creek - Blackbird Creek to Napias Creek	COLD SS	SCR	
S-12a	Blackbird Creek - source to Blackbird Reservoir Dam	COLD SS	SCR	
S-12b	Blackbird Creek - Blackbird Reservoir Dam to mouth	NONE	SCR	
S-13a	West Fork Blackbird Creek - source to concrete channel	COLD SS	SCR	

Next, identify the CWA § 101(a)(2) existing uses. As the existing uses may no longer be attained in or on the water body, this step may require considerable research and investigation. Typically, meeting with residents who are knowledgeable about the water body and discussing it with the local, state, tribal, and federal agencies charged with protecting natural resources may help focus the search for data about the existing use (Smithee 2008). During the initial existing use discussions, questions about the feasibility of a UAA may arise and ensuring accurate identification of the existing uses will move the process forward.

5.1 Document Existing Uses

Many factors—human and natural—can affect water quality. To understand the system as a whole, identify and quantify as many of these factors as possible. Any historical data on the water body should be included and evaluated for trends. The *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses* (EPA 1983) and the Water Environment Research Foundation's (WERF's) *A Suggested Framework for*

Conducting UAAs and Interpreting Results (WERF b 1997) details characteristics outlined in this section. DEQ recommends the UAA developer become familiar with these documents.

Table 3**Error! Reference source not found.** provides some environmental data resources to d etermine existing uses—contact the resources on this list (and any other known sources) for information about the water body of interest.

Table 3. Resources available for determining existing uses.

Information repositories	Environmental Data Management System (EDMS)—IDWR database STORET—EPA database
State agencies	Idaho Department of Fish and Game (IDFG) Idaho Public Health Districts Idaho Department of Environmental Quality (DEQ) Idaho Department of Water Resources (IDWR) Idaho Soil Conservation Commission
Federal agencies	Bureau of Land Management (BLM) Bureau of Reclamation (BOR) US Bureau of Mines US Forest Service (USFS) US Environmental Protection Agency (EPA) Natural Resource Conservation Service (NRCS) US Fish and Wildlife Service (USFWS) US Geological Survey (USGS) . National Marine Fisheries Service (NMFS)
Tribes	Native American tribes interested in or having information about the water bodies to be studied
Academic institutions	Public and private universities Professional academies (e.g., Idaho Academy of Sciences)
Nonprofit organizations	Idaho Conservation League Trout Unlimited Idaho Rivers United

Preparing a plan for analyzing data on past conditions is a necessary part of the UAA process as these data will likely help determine the existing water body uses and prior habitat conditions. Make every effort to compile data from a wide variety of sources, spanning as many years as possible. When investigating COLD and SS uses, current stream channel habitat condition and records since 1975 may not indicate salmonid spawning is attainable in waterbodies that were historically used by spawning salmonids and could be suitable habitat after population recovery or habitat restoration. In these cases, an absence of evidence may not equate the evidence of absence.

Evidence of salmonid reproduction (e.g., observation of redds [fish nests] or spawning activity) is considered evidence that the waters provide habitat for salmonid spawning. Summertime presence of juvenile salmonids (i.e., individuals less than 100 millimeters overall length) in 1st through 4th-order streams may be considered sufficient evidence that salmonid spawning has occurred in the near vicinity based on the expectation that juvenile fish stay close to their redd location (Chapman and Bjorn 1969). In that case, salmonid spawning may be considered an

existing use for assessment purposes in the portions of the AU for which the site is representative (WBAG 2016) When drafting a data collection and monitoring plan, identify the existing uses of the delineated water body and clearly define the methodology used to identify existing uses. Determining the existing uses may be difficult when those uses are impaired and no longer occur in the water body. To document beneficial uses are not existing uses, the UAA developer must exhaust as many data sources as possible to identify the beneficial uses actually attained on the water body since November 28, 1975.

Use methods, such as a survey or questionnaire, to gather information from residents knowledgeable in the water body's history and to determine how they have used the water body. Once compiled, determine the data's overall usefulness and the scientific rigor to use during the analysis. Data quality is discussed in section 7.2.1.

5.2 Evaluate UAA Feasibility

Comparing a water body's existing uses to the designated uses is the final step in determining the feasibility, or utility, of a UAA. The water body must be protected for any existing uses if the existing uses have criteria that meet or exceed those of any designated or presumed use.

A UAA may be undertaken if existing uses do not meet or exceed the designated uses. For example, if the existing use for a water body is determined to be warm water aquatic life and the designated use for that water body is cold water aquatic life, a UAA is required to change the use to warm water aquatic life because the criteria associated with warm water aquatic life use are less stringent than the criteria associated with cold water aquatic life. The existing warm water aquatic life use does not exceed the designated use of cold water aquatic life, and the designated use may be evaluated to determine whether it should be changed through the UAA.

6 Alternatives to Conducting a UAA

Initial decisions must be made when developing a UAA. Before beginning a UAA, discuss the UAA's purpose with DEQ water quality standards staff. This discussion will also determine if a UAA is necessary. Discussing the UAA with DEQ staff throughout the process improves the likelihood that any resulting use change will be approved. Alternatives to the UAA process include the following.

6.1 Variance

A variance provides a temporary modification to the applicable water quality standards (IDAPA 58.01.02.260). DEQ grants variances to facilities for specified pollutants in their wastewater discharge based upon a rationale explaining why meeting the water quality standard is not attainable. The allowed reasons for a variance are largely the same as for beneficial use changes under a UAA. A variance is more specific to a site on a water body relating to the discharge where a UAA is broader in scope and nature affecting the entire water body unit.

Variances last for the duration of an Idaho Pollutant Discharge Elimination System (IPDES) permit, usually 5 years, and may be renewed if reasonable progress is made toward meeting prevailing criteria. The variance remains in effect for the life of the permit. If the permit expires or is not administratively continued, then the applicant must meet the water quality standards, or re-apply for the variance (IDAPA 58.01.02.260.04). Idaho's process for granting variances is administrative which requires the variance to go through rulemaking, adoption by the Idaho Board of Environmental Quality and the state legislature, and approval from EPA before the variance becomes applicable.

6.2 Compliance Schedule

Permits may contain compliance schedules to provide additional time to achieve compliance with the IPDES rules and permit conditions based on the CWA and applicable federal regulations (IDAPA 58.01.02.010.16). If an individual discharger requests additional time to comply with a permit condition based on new or revised criteria, a permitting authority may include a compliance schedule as part of the discharger's IPDES permit. Schedules developed under this provision require the permittee's compliance as soon as possible, and compliance cannot extend past the date for final compliance established by the CWA (EPA 2010a). Permit compliance schedules are not appropriate for every type of permit requirement.

7 UAA Study Plan

"Two of the cornerstones of science advancement are rigor in designing and performing scientific research and the ability to reproduce… research findings. The application of rigor ensures robust and unbiased experimental design, methodology, analysis, interpretation, and reporting of results. When a result can be reproduced by multiple scientists, it validates the original results and readiness to progress to the next phase of research" (Hofseth 2018).

7.1 Quality Assurance Project Plan (QAPP)

Designating a beneficial use requires changing Idaho's water quality standards. Before a proposed change to a water quality standard goes into effect, the proposal will be reviewed by DEQ staff and administration. If DEQ approves the proposal, staff will begin the negotiated rulemaking process to adopt the changes into rule. That process includes public participation, review by the Idaho Board of Environmental Quality, review by the Idaho Legislature, and submittal for review by the EPA. The proposed change must be approved by all these entities before the new beneficial use is designated and enforced as a water quality standard. For this reason, it is highly recommended that all data generated during a UAA is supported by a Quality Assurance Project Plan (QAPP). Third-party entities are strongly encouraged to have their QAPPs reviewed by EPA or DEQ prior to data collection.

A QAPP specifies the type and quality of data needed to answer the project's questions and appropriately document results that justify a use designation or a change in the designated use.

The QAPP also details how quality assurance and quality control requirements must be applied to ensure results are the correct type and of sufficient quality. A QAPP guides the overall UAA monitoring and analysis process (i.e., planning, implementation, and assessment) and smooths the way for EPA approval (EPA 2002). QAPP templates are available from the EPA through the Quality Assurance Project Plan Development Tool (EPA 2020).

7.2 Data Collection and Monitoring Plan

While collecting field data to determine current conditions, follow the monitoring protocols from DEQ's BURP field manual, EPA's rapid bioassessment protocol (RBP), and Environmental Monitoring Assessment Program (EMAP), or other peer-reviewed methodologies and quality assurance plans.

7.2.1 Data Tiers and Descriptions

DEQ uses a three-tiered approach to appropriately evaluate various data types. Table 4

Table 44 summarizes the three data tiers and provides examples of different data types in each tier. DEQ uses different tiered data for planning and reporting purposes (DEQ 2016, section 7.2.1). The UAA may include all tiers, but data in Tiers I and II provide more weight than data in Tier III. This weighting does not preclude data from Tier III being used; however, historic SS use data or older data regarding presence of anadromous species may be given more consideration when the investigator evaluates existing uses relevant to these species. Tier I and II data should have a higher significance when evaluating the data.

Table 44. Description, examples, and incorporation of data tiers in the UAA.

Scientific Rigor	Relevance	Example	How Used
Tier I			
• Quantitative • Measured parameters • Established monitoring plan with quality assurance and defined protocols • >30 hours of supervised training • Samples processed in EPA-certified lab following standard methods or by professional taxonomist • Organisms identified by a professional taxonomist	• Data relate to either water quality standards, especially numeric, or a beneficial use • ≤5 years old • Georeferenced data	• PhD or master's thesis • Published or printed studies or reports • Published predictive models • EPA NARS • BURP data	• § 303(d) listing or delisting • § 204(b) reports • Subbasin assessments • TMDLs • Future planning
Tier II			
• Qualitative or semiquantitative • May have a monitoring plan • No quality assurance/quality control plan • Protocols may or may not be defined • Parameters rated • Field staff may not be trained; lab may not be certified • Taxonomist may not be a professional	• Watershed-related data • Not water body specific • Data >5 years old • Data may relate to other agency guidelines or objectives	• Environmental assessments • Proper functioning condition • Cumulative watershed effects • Citizen monitoring • Models with documentation • Agency planning documents	• § 305(b) reports • Subbasin assessment or TMDLs when data add to overall assessment quality • Future planning
Tier III			
• May be qualitative in nature • Parameters evaluated • Field staff has little to no training • No documented monitoring plan • No quality assurance/quality control plan • Anecdotal in nature	• Not specific to water quality standards or beneficial uses • Unspecified location •	• Nonspecific reports or studies • Newspaper articles • Simple models without any documentation	• Future planning • Hold for further investigations

Notes: National Aquatic Resource Survey (NARS), Beneficial Use Reconnaissance Program (BURP), total maximum daily load (TMDL)

7.2.2 Watershed-Level Characteristics

Describe the characteristics associated with the entire watershed. The characteristics listed below should be addressed, and more may be needed depending upon the specific watershed.

- Climate
- Geology
- Topography
- Land use (e.g., percent of forest cover, agriculture use, and irrigation)
- Point source dischargers
- Nonpoint pollution
- Historic land use

7.2.3 Physical Characteristics

Developing a suitable water body survey requires understanding the physical characteristics of the water body and the effects of change on these characteristics. Physical characteristics influence the reaction of the system to pollution and the effects of pollutants on the aquatic community. These factors may correlate with each other. Separating the effect of a change to one factor from the others may prove difficult. The factors that constitute a stream's physical environment cannot be evaluated by assessing only one characteristic. A broader and more encompassing survey is necessary. Address the following physical characteristics:

- Instream habitat
  - Percent cover (above and within the stream)
  - Suspended sediment
  - Percent pools
  - Temperature
- Channel morphology and structure
  - Slope
  - Bankfull width, depth
  - Flow
  - Bank stability
  - Sinuosity
- Streambed composition
  - Percent composition of streambed materials
  - Large organic debris
  - Substrate embeddedness

7.2.4 Water Quality Characteristics

Measure the stream's chemical characteristics to determine the existing water quality condition. Chemical concentrations and characteristics tend to vary significantly throughout the day and year. Site selection and monitoring times are important for data analysis and review and should be outlined in the monitoring plan and analysis and review plan to ensure the range of chemical characteristics are observed during the study. Study the chemical characteristics listed below. Characteristics can be added to or subtracted from this list based upon the water body under investigation.

- Dissolved oxygen
- Turbidity
- Intergravel dissolved oxygen
- Clarity
- Toxic substances in water, sediment, and fish tissue
- pH
- Phosphorus (e.g., total and ortho)
- Chlorophyll *a*
- Metals in water, sediment, and tissue

- Nitrogen (e.g., total Kjeldahl nitrogen, nitrate, and nitrite)

7.2.5 Biological Characteristics

Aquatic insects and fish are very sensitive to changes in water quality, and their presence, abundance, and health indicate the overall quality of a water body. Generally, unpolluted waters support a greater variety of aquatic insects and fish than polluted waters. When combined with habitat assessment, biological data can determine the existing and beneficial use status of Idaho water bodies (DEQ 2018).

7.2.6 Macroinvertebrate Species

Benthic macroinvertebrates are the preferred indicator fauna of existing cold water aquatic life use because they have either limited migration patterns or a sessile (attached) form of life. These characteristics make them well suited for evaluating local environmental conditions. Some macroinvertebrate species only reside in streams with cold temperatures. If these species are present, the stream likely has consistently cold temperatures. The WBAG discusses how to apply the macroinvertebrate coldwater indicator taxa lists (DEQ 2016, section 3).

7.2.7 Fish

Fully describe the aquatic vertebrate community, including both game and nongame fishes. Multiple methods of fish capture (e.g., electroshocking, snorkeling, and hook and line) may be used, as well as mining past data to determine the fish community structure.

When characterizing the fish community, address key bull trout watersheds and the distribution of sensitive, threatened, and endangered species (key bull trout watersheds are found in 40 CFR 131.33 and the *Bull Trout Conservation Plan* [Batt 1996]). If either of these documents contains the water body of interest, at a minimum cold water aquatic life will be considered an existing use in all water bodies designated as critical habitat for anadromous species. Furthermore, salmonid spawning should also be considered and existing use in any of these water bodies that also have the physical capacity to support spawning, absent human impacts.

7.2.8 Vegetation

Fully describe the riparian zone and any instream vegetation. Include any information regarding invasive aquatic and terrestrial vegetation, such as Eurasian milfoil (*Myriophyllum spicatum*), purple loosestrife (*Lythrum salicaria*), and any other nonnative plant species.

7.2.9 Wildlife

Unlike the macroinvertebrate and fish communities, no direct tie exists between Idaho's water quality standards and the other aquatic (and aquatic-dependent) communities. Most of these other aquatic communities, such as the algae and amphibian communities, receive less attention than the macroinvertebrates and fishes. However, evaluating these communities may give the UAA developer a clearer understanding of the pollutants affecting the aquatic system.

7.2.10 Socioeconomic Characteristics

The UAA is one of the few areas in water quality standards allowing a state to incorporate social and economic factors into consideration. A socioeconomic analysis accounts for both monetary and nonmonetary effects. The socioeconomic analysis should find the best way to allocate resources to support the beneficial uses. To change or remove a designated use based on socioeconomic characteristics, the UAA developer must demonstrate that attaining the designated use will result in substantial and widespread economic and social impacts (EPA 1995). The UAA developer should assess the general economic health of the communities that would be affected by a change in the beneficial use designation and ascertain whether a socioeconomic hardship will be evaluated as a factor for nonattainment. This broad overview of the social and economic activities may help put the UAA into context for the developer, as well as for DEQ and EPA. Most other aspects of water quality standards (e.g., setting criteria and assessing support of beneficial uses) do not factor in economic considerations.

DEQ recommends the UAA developer read the *Interim Economic Guidance for Water Quality Standards Workbook* (EPA 1995) before beginning the socioeconomic portion of the UAA. EPA also developed spreadsheet tools (EPA 2016b) for evaluating economic impacts. Rather than providing a yes or no answer to the question of whether widespread socioeconomic hardship should be evaluated as a factor for nonattainment, the spreadsheet tools collect and organize the information that should be considered, perform the required calculations, and display the results in a useful format.

Describe the overall economic health of the communities within the watershed and evaluate the financial consequences (positive and negative) of a beneficial use change. Include major employers and natural resource interests (e.g., mining and timber) that might impact, or be impacted by, water quality.

7.3 Public Involvement Plan

Involving individuals and agencies affected by a change to the designated beneficial use is key to the UAA process. The UAA process can be complex and costly, and DEQ, acting as a guide and mediator, can minimize the time and expense of UAA development and help to ensure the public is involved during the UAA development. A strong UAA that succeeds in a rule change requires public involvement from the earliest stages.

The avenues available for public involvement include public meetings and contacting local agencies and resource managers such as soil conservation districts, federal agencies, irrigation districts, agricultural, mining, environmental groups, and other agencies interested in the UAA process. For example, if the UAA developer is a special interest group (e.g., an environmental or industrial organization), they may want to contact the watershed advisory group (WAG) and basin advisory group (BAG) that oversee local interests for help in involving the public throughout the process. DEQ's website provides a link to the BAGs and WAGs within each region. During the UAA analysis process, include opposing special interest groups to gain a complete and balanced perspective.

In the public involvement plan, describe the targeted public interests, how those interests will be contacted, and how the results of public comments and concerns will be addressed in the final UAA report.

If a UAA successfully proposes and provides the technical justification for a use designation change, it must be adopted consistent with Idaho Administrative Act procedures and requires EPA approval prior to becoming applicable for CWA purposes.

Resources discussing public involvement to improve stakeholder buy-in are found in the *Collaborative Water Quality Solution: Exploring Use Attainability Analysis* (NACWA and WERF 2007).

7.4 UAA Discussion

Once the steps above have been completed, the UAA developer should arrange another meeting with DEQ. DEQ will arrange for collaborative discussions with EPA to discuss the UAA and supporting documentation. DEQ and EPA strongly recommend involving EPA at this time to increase the likelihood that any changes to the beneficial uses supported by the UAA will receive timely consideration during the administrative review and approval process. Discussions may likely focus on the data collection and monitoring plan and how the results of those efforts will be used.

8 Beneficial Use Data Collection

EPA published several guidelines for the UAA process and economic analysis, and the WERF evaluated completed UAAs to see how well the UAA process has worked in various states (WERF 1997a and 1997b). The UAA process is receiving a high degree of interest as federal and state agencies begin to evaluate the appropriateness of designated beneficial uses. In addition to this guidance document, the following references are helpful in developing a UAA and performing the analysis of the data gathered.

- *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses* (EPA 1983)
- *Guidelines for Preparing Economic Analyses* (EPA 2010b)
- *Water Quality Standards Handbook* (EPA 2014)
- *Stressor Identification Guidance Document* (EPA 2000b)
- *Compendium of Tools for Watershed Assessment and TMDL Development* (EPA 1997)
- *Water Quality Models: A Survey and Assessment* (Fitzpatrick et al. 2001)
- *A Suggested Framework for Conducting UAAs and Interpreting Results* (Michael and Moore 1997)
- *A Comprehensive UAA Technical Reference* (Novotny et al. 1997)
- *Factors for Success in Developing Use Attainability Analysis* (Freedman et al. 2008)
- *Guidelines for Ecological Risk Assessment* (EPA 2003)

- *State of Oregon Use Attainability Analysis and Site-Specific Criteria Internal Management Directive* (ODEQ 2007)
  Decision Tool for Downstream Water Quality Protection (EPA 2016a)

8.1 Reasons for Unattainability and Nonattainment

The goal of the CWA § 101(a)(2) is water quality that—*wherever attainable*—provides for the "…protection and propagation of fish, shellfish, and wildlife, and recreation." A designated § 101(a)(2) beneficial use may be revised or removed if the designated beneficial use is not an existing use, and it is demonstrated that attaining the designated beneficial use is not feasible due to one of the factors listed in IDAPA 58.01.02.102.02.a.

Sections 8.2 through 8.88.2 describe each of the six factors listed in IDAPA 58.01.02.102 and elaborate on the type of information that will help the UAA developer. Each factor is discussed with questions the developer should address to prove a change to a beneficial use is needed.

8.2 Naturally Occurring Pollutants

Naturally occurring sources of a pollutant (e.g., toxics, conventional pollutants, and heat) may result from geologic activity or formations releasing pollutants into surface waters at concentrations exceeding water quality criteria and preventing beneficial use attainment (IDAPA 58.01.02.102.02.a.i). Although natural sources of pollution cannot be remedied, in some instances it is possible the aquatic community in the water body has adapted to tolerate the higher pollutant concentration, and the biological use may not be impaired although a water body may exceed the criteria. In these situations, a site-specific criteria might be a more appropriate solution.

However, the UAA developer should ask several questions when considering using the naturally occurring pollution factor to remove a designated use:

1. Are the water quality criteria exceeded due to pollutant concentrations from natural sources?
2. Is the designated use impaired due to pollutant concentrations from natural sources?
3. If the designated use is not impaired, would site-specific criteria be appropriate?

Natural background conditions are discussed in the *Concepts and Recommendations for Using the "Natural Conditions" Provisions of the Idaho Water Quality Standards* (DEQ 2015).

8.3 Natural Flow Conditions

Natural flow conditions may prevent a use if they reduce or eliminate physical habitat required to support aquatic life uses; eliminate, or significantly reduce, standing populations of aquatic biota; or cause significant changes in substrate, or other physical structure, and change the structure of the biological community (Michael and Moore 1997). For example, naturally shallow or slow-moving streams may exceed temperature criteria through solar heating, which

may also lead to low levels of dissolved oxygen. “Natural, ephemeral, intermittent, or low flow conditions can be a valid reason to undertake a UAA…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” (IDAPA 58.01.02.102.02.a.i).

Questions the UAA developer should address when determining if natural flow conditions preclude use attainment include the following:

1. Are flows relatively constant throughout the year or do they vary significantly based upon the season?
2. Do periodic low flows temporarily prevent or impair aquatic life uses?

After answering these questions, the developer should address the duration of the natural flow condition impairing the beneficial use and identify the impacts causing the water body to not support the designated beneficial use. Seasonal flooding is a natural part of most water bodies in Idaho and should not be considered in developing a UAA unless the developer can show that the flooding makes the aquatic life use unattainable for most of the time water flows in the channel. For example, an ephemeral stream channel designated for an aquatic life community contains water only after major rain events (e.g., washouts, gullies, and some intermittent streams). It is possible that intermittent and ephemeral streams would be needed to define and protect those waters subject to this type of natural disturbance more accurately.

8.4 Human-Caused Conditions that Cannot be Remedied

Human-caused conditions or pollution sources include a wide range of situations that prevent beneficial use attainment or that cannot be remedied or would cause more damage to correct (IDAPA 58.01.02.102.02.a.iii). These conditions include flow modifications, modified physical features (deepened and straightened stream channels), land uses contributing to nonpoint pollution, and point source pollutant discharges. Conditions that cannot be remedied may be historic with such long-standing effects that remediation efforts are not feasible or will not return the water body to a condition of use attainment; conditions are too widespread over an area and too broad for controls to be effective and the cost of controlling the pollution is prohibitive; and the remediation effort subjects the water body to more environmental damage and would not lead to measurable improvements within the water body (Michael and Moore 1997).

To demonstrate that the pollution cannot be remedied, answer the following:

1. What methods were used to identify the condition that impairs the use?
2. What was the historic beneficial use, if known?
3. What would correction/remediation mean for the waterbody?
4. How much habitat disturbance would the corrective actions incur?
5. What alternatives, if any, are available for maintaining the functions performed by structures or practices that might be removed as part of corrective action?

6. If contaminated sediments were dredged or tailing piles moved, what is the potential for the disturbance of such materials to cause adverse effects on downstream uses? Is there a potential for cross-media pollution?
7. How are aquatic use benefits weighed against possible air and land impacts?
8. How long will it take for corrective actions and remediation to take effect and is that amount of time reasonable in the context of the cost and effort required to implement the actions?

8.5 Hydrologic Modifications

IDAPA 58.01.02.102.02.a.iv. states “Dams, diversion 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.”

A UAA focused on changing or removing recreational uses may need to address some of the same components as an aquatic life use UAA. The differences between a recreational use and aquatic life use UAA survey will vary among water bodies and should be addressed during the UAA development planning stage. The UAA developer should address the following questions when determining if hydrologic modification precludes use attainment:

1. Is it feasible to remove human structures, such as dams and flood control structures, to return a water body to its natural state?
2. What evidence exists to document the nature of the water body before human factors were introduced?
3. What constraints preclude operating the modification in a manner that would allow for attaining the designated use?
4. Does the disturbance caused by attaining the highest attainable use (HAU) outweigh the benefit of maintaining the current habitat?
5. How, and to what degree, would the water body’s existing character change if the hydrologic modification were removed?
6. What alternatives exist for maintaining the functions performed by the structures or practices?
7. What role can the water body serve in the recovery of Endangered Species Act (ESA) listed species?

8.6 Physical Conditions

IDAPA 58.01.02.102.02.a.v. states “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.”

Physical features (including substrate, instream cover, hydrology, stream-channel and basin morphology, bank stability, riparian vegetation, and other ecological features) should be the primary element in determining the type of aquatic community the water body can support.

Natural physical conditions might preclude use attainment. The list of physical features in the regulation does not provide an exclusive list but gives examples of physical characteristics that could preclude attainment. Appropriate use designations should account for physical conditions as well as chemical conditions to determine the appropriate beneficial use.

A UAA should contain components that evaluate the water body's physical condition and identify the uses the water body can support. To determine if natural physical features of the water body preclude attainment of the designated use, ask the following questions:

1. Is the inadequate physical condition natural or human-caused?
2. To what degree do the natural physical features of the water body preclude the attainment of the designated use?
3. Is correcting those physical features not supporting aquatic life uses feasible?

8.7 Substantial and Widespread Economic and Social Impact

IDAPA 58.01.02.102.02.a.vi. states "Controls more stringent than those required by section 301(b) and 306 of the Act would result in substantial and widespread economic and social impact."

Of the six factors for determining use nonattainment, economic and social impact is one of the most ambiguously stated and difficult to interpret. Recognizing that economic factors should be considered when determining use attainability, the US Congress and EPA agreed the tests for using this factor should be more stringent than a simply comparing costs and benefits (EPA 1995; Michael and Moore 1997). EPA's draft guidance on preparing an economic analysis does not give a quantitative definition for what constitutes *substantial* or *widespread* (EPA 2000a). The UAA developer should address the socioeconomic factor with these initial questions:

1. How is widespread determined—in terms of the numbers of people affected, percent of population affected, geographical extent, or some combination?
2. What is the threshold for substantial—in terms of aggregate dollars, percentage utility rate increases, percentage of disposable household income, or a percent change in economic indicators?
3. Over what time frame should economic impacts be evaluated?
4. What economic factors should be evaluated and how can the value of environmental protection be appraised in an economic analysis?
5. How will other impacts, such as opportunity costs, resource diversion from other community services, and community debt load, be evaluated?
6. What is the acceptable risk threshold?
7. How many causal levels should be evaluated when conducting risk analysis?
8. How will the up- and downstream economic impacts be included in the calculations?
9. What will the specific cost of cleanup for downstream users be if upstream agencies fail to build and operate new treatment facilities?
10. What specific evidence should be required to demonstrate that substantial economic impacts are occurring from stringent uses and/or water quality criteria?

11. What type and amount of scientific evidence is required to demonstrate and quantify risk in the decision-making process?

UAA developers should address and integrate the following key ideas into the UAA including a credible and objective analysis of socioeconomic impacts (Michael and Moore 1997):

- Acknowledge and attempt to quantify the value of a healthier environment.
- Acknowledge a cost to one may be a benefit to another. Include both sides of the impact.
- Use a watershed analysis approach when identifying costs and benefits. Costs evaded are not costs avoided. Evading treatment upstream transfers costs to downstream users.
- Use conservative estimates when making any assumptions.
- Rather than using a strict economic cost/benefit analysis, translate economic impacts into social costs and minimize the net risks of the proposed modification.

Further discussion of economic issues is found in *Guidelines for Preparing Economic Analyses* (EPA 2010b)

8.8 Pollution Controls

Federal regulation considers uses attainable if they can be achieved after imposing the effluent limits required under CWA § 301(b) and § 306 *and* cost-effective and reasonable BMPs for nonpoint source control (40 CFR 131.10(d) and 40 CFR 131.10(h).2). In addition to determining the cause for nonattainment of a beneficial use, identify:

1. The pollution controls currently in place;
2. What controls can be implemented in a cost-effective and reasonable manner; and
3. The expected outcome of implementing those controls.

Identifying the controls highlights the need for environmental community modeling to determine the consequences of implementing certain controls. It is likely the modeling efforts used to determine nonattainment and the highest attainable use may be combined, reducing the financial costs and time needed for the UAA.

Examine the point and nonpoint sources of important pollutants, relative significance of point and nonpoint sources, and whether the pollutant inputs are constant or intermittent. Include a detailed cost-benefit analysis of point and nonpoint sources control and highlight the degree to which implementing these controls would improve the water body.

Current point source regulations make them the easiest targets for reducing pollutant loads. Nonpoint sources are subject to voluntary controls, making it more difficult to conduct a UAA if most of the pollution is due to nonpoint sources. To determine use attainability and the highest attainable use, a UAA developer should examine the impacts of applying BMPs to all nonpoint sources within the watershed.

9 Highest Attainable Use

The *highest attainable use* is the aquatic life or recreation use that is both closest to the uses specified in CWA § 101(a)(2) and attainable, based on evaluating the factors in CWA § 131.10(g) that preclude attainment of the use and any other information or analyses used to evaluate attainability. The highest attainable use is not required when the state demonstrates the relevant use specified in CWA § 101(a)(2) and the subcategories of such a use are not attainable (40 CFR 131.3(m)).

Smithee (2008, Appendix 4, attachment 3) found that "In 1998, EPA stated that 'Designated uses focus on the attainable condition while existing uses focus on the past or present condition.' EPA links these uses in a manner which intends to ensure that States and Authorized Tribes designate appropriate water uses, reflecting both the existing and attainable uses of each waterbody (40 C.F.R. § 131.10) ...and the potential of a waterbody to attain a use, and not simply base the use designation on what has been attained, (i.e., the existing use)." If it can be shown that removing a designated use will not remove an existing use and factors exist hindering designated use attainment, the highest attainable use must be determined and designated (Smithee 2008).

As stated in EPA (2006), "EPA requires that a UAA provide sufficient information to support a technical and legally defensible determination that a 'fishable/swimmable' use is not attainable and to support the designation of any use that does not include the 'fishable/swimmable' use (40 CFR § 131.6(f)). In other words, there must be an adequate scientific and technical rationale in the administrative record to support the resulting use change. UAAs must have sufficient data and information to demonstrate that attaining the fishable and/or swimmable use is not feasible [using one or more of the IDAPA 58.01.02.102 factors], and the analysis must identify and result in the adoption of the 'highest attainable use,' which should reflect the factors and constraints that were evaluated as part of the UAA process. In identifying the highest attainable use, the same regulatory factors and the data analysis used to support removing a use should also be used to determine the highest attainable use. EPA interprets the CWA's objectives at sections 303(c) and 101(a)(2) of the Act to mean that, 'wherever attainable,' waters must protect the CWA section 101(a)(2) uses and that States should be striving to attain the CWA section 101(a)(2) uses by designating the attainable use as close to a CWA section 101(a)(2) use as possible (i.e., the highest attainable use)."

Once the expected pollution control outcome is identified, the developer can determine the expected outcome of the UAA.

Computational modeling may play an important role during the UAA process. Models can determine the highest attainable uses by evaluating current conditions, implementable regulatory controls, and changes in nonpoint source loads occurring under BMPs. Estimating the effects of pollution and reductions in pollution can be difficult without the help of mathematical models to describe these changes in the system. The EPA Center for Exposure Assessment Modeling distributes simulation models and database software designed by EPA and other government academic and commercial entities "to quantify movement and concentration of contaminants in lakes, streams, estuaries…" (EPA 2017).

Describe the intricate relationship between the physical, chemical, biological, and socioeconomic characteristics to select a model capable of handling both the temporal and spatial scales linking environmental controls and quality. A National Research Council study (2007) identified several concerns to address when selecting a model:

- Model parameters
- Model parsimony
- Model assumptions and limitations
- Model uncertainty

Address these parameters when describing the selected model. Fully describe the model and how it will be used to assess beneficial uses, ensure model validation and calibration, how the model will meet its intended goals, and how uncertainty will be dealt with.

10 UAA Administrative Review

Administrative review and approval begin after collecting data, analyzing results, determining attainable uses, proposing a use change, and submitting the final UAA package to DEQ. The administrative review involves approving the proposed use change by the DEQ Board of Environmental Quality, Idaho Legislature, and EPA.

10.1 DEQ Review

Once DEQ receives a UAA submittal, staff reviews the UAA and determines if a use change is substantiated for the water body of interest. Appendix B contains a summary review form for a submitted UAA. DEQ staff completes the form to ensure the submitted UAA has followed the required steps in the UAA process. A brief staff recommendation is also included on the summary form. If staff recommends a use change is warranted, DEQ begins the rulemaking process to change the appropriate use. This process involves publishing an Administrative Bulletin of the intent for a rule change, negotiated rulemaking, and submitting the proposed rule language to the DEQ Board of Environmental Quality for adoption before publishing the pending rule. It may take 1 year or more to complete this process depending upon the timing of the UAA submittal and review.

10.2 Legislative Approval

After the DEQ Board of Environmental Quality adopts the rule change, it is presented for approval in the next legislative session before it becomes a final rule. This step makes UAA submittal timing critical.

10.3 EPA Review

Once the Idaho Legislature approves the rule, DEQ submits a package to EPA for review. As stated in 40 CFR 131.6, a use revision submission package must include an attorney general

certification, technical justification, and a solid, legal basis for the use change. After receiving the package, EPA staff has 60 days to approve the rule changes or 90 days to disapprove the rule changes. Reviewing and justifying the change in use requires time and best professional judgment. In some cases, EPA may need to consult with other state, federal, and tribal agencies. If approved, the change in beneficial use designation for the water body is in effect for CWA purposes. If EPA disapproves the change in beneficial use designation, then that use change is not recognized by EPA for CWA purposes (e.g., IPDES permitting, TMDL development, and § 303(d) impairment listing). The Idaho water quality standards retain the previous rule language noting that it is the effective rule until the updated language is approved by EPA. DEQ strongly recommends involving EPA throughout the UAA process to speed the approval process.

10.4 Three-Year Review

As stated in 40 CFR 131.20(a), "The State shall also re-examine any water body segment with water quality standards that do not include the uses specified in section 101(a)(2) of the Act shall be re-examined every three years to determine if any new information has become available. If such new information indicates that the uses specified in section 101(a)(2) of the Act are attainable, the State shall revise its standards accordingly. Procedures established by States for identifying and reviewing water bodies for review should be incorporated into their Continuing Planning Process."

If designated aquatic life or recreation uses are removed from a water body in their entirety, the water body's designated use must be reexamined every 3 years to determine if the water body has become capable of attaining a designated use specified in CWA § 101(a)(2).

11 UAA Submittal

The DEQ director has the authority to designate and revise uses (Idaho Code § 39-3604 and § 39-3607). Submit a completed UAA to DEQ for review by the director, regional administrator, surface water program manager, and assigned regional and state office staff. In the UAA submittal package, include monitoring, analysis, and quality assurance plans to guide the overall progress of the UAA and documentation showing the public's involvement throughout the process (e.g., meeting notes and copies of survey results). When submitting the UAA, use the format outlined in 0 to facilitate the UAA review.

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Appendix A. Use Attainability Analysis Questions and Answers

1. What is a Use Attainability Analysis (UAA)?

A use attainability analysis (UAA) is a *structured, scientific assessment* of the factors affecting the attainment of the use of a water body, such as swimming, fishing, and drinking. Water body uses are designated for protection in the state's water quality standards. A UAA is the tool used to evaluate the potential to remove nonexistent and nonattainable designated uses, or to establish subcategories of uses. Federal regulations guide UAAs; the results must be adopted into the water quality standards and approved by the US Environmental Protection Agency (EPA) as meeting the federal Clean Water Act (CWA) and Endangered Species Act (ESA).

2. What steps must be taken to remove or modify a designated use?

The following steps must occur before a use can be modified or removed:

a. An acceptable UAA must be prepared, either by the Idaho Department of Environmental Quality (DEQ), or by entities outside DEQ and submitted to DEQ.
b. The UAA must contain sufficient information to demonstrate to DEQ and EPA that the designated use is not existing and not attainable.
c. The UAA must identify the highest attainable replacement use for any water body evaluated.
d. DEQ must remove or modify the use in Idaho's' water quality standards through the formal rulemaking process.
e. DEQ must submit the revised rule to EPA for approval.
f. EPA must approve the rule (after appropriate consultation with federal agencies and tribes).

3. Can a use be removed or modified based solely on water quality criteria not being met?

No. Failure to meet a water quality criterion already established to protect a use is not by itself sufficient evidence to show the use is not attainable.

4. What uses can be removed?

States may remove nonexisting and nonattainble designated uses. Federal regulation 40 CFR 131.10(g) contains the rules covering the circumstances under which a state can remove a use:

"*States may remove a designated use which is not an existing use, or establish subcategories for a use requiring less stringent criteria if the state can demonstrate that attaining the designated use is not feasible (not an attainable use) because one or more of the following six conditions are met:*

1. *Naturally occurring pollution 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*
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 condition related to the natural features of the water body, such as lack of 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 Section 3031 (b) and 306 of the Act would result in substantial and widespread economic and social hardship."*

5. What are designated, existing, and attainable uses?

A: *Designated uses* are specifically assigned (designated) to a water body in the Idaho Administrative Procedures Act for protection under the water quality standards. Designated uses may or may not be existing uses.

- Once a use is designated in a state's standards, it receives special regulatory protection.
- A UAA can be used to remove or modify designated uses but only if the yare not existing and not attainable uses.

Existing uses are those in existence after November 28, 1975, whether or not they have been designated in Idaho's water quality standards.

- An existing use cannot be removed, even with a UAA.
- An existing se may not be optimally supported (use may be affected by current conditions but is still present in the water body).
- All existing uses must be protected whether or not designated.

Attainable uses may not be existing uses or the designated uses but can be attained by applying technology-based effluent limits to point sources and cost-effective best management practices to nonpoint sources. The attainable level of water quality must be determined, taking into account the capacity of the natural system, as well as the technical and economic limitations of human sources, throughout the basin affecting the water body.

When conducting a UAA, the focus should be on objectively determining the attainable uses and attainable water quality, irrespective of designated uses.

6. Can a water quality criterion be made less stringent?

Yes. Criteria can sometimes be revised to represent the attainable level of water quality without changing the designated use. This revision can be based on determining whether natural conditions in the area are of a lower quality than the numeric criteria. In some cases, the water body has special physical and chemical characteristics modifying or interfering with the toxicity of a chemical, or the plants and animals in the water body are not adequately represented when developing the existing water quality criteria. In such cases, it might be possible to develop a site-specific criterion for the water body. Site-specific criteria development is general a very costly process and should be undertaken only after thorough discussions with DEQ and EPA.

7. Can a UAA be used to change a water quality criterion?

No. A UAA can be used to chagne the beneficial use that may result in a different water quality criterion being applied to the water body, but it does not change the water quality criterion associated with a particular beneficial use.

8. What other considerations affect UAA results?

Considerations affecting UAAs include the following:

- Downstream uses and criteria. Approvable UAAs must not interfere with downstream uses and criteria.
- Revisions must be based on sound science. UAAs are not limited to using available information. Additional data collection and research are likely to be needed.
- Attainable use protection. The UAA must identify the highest use attainable.

9. Who may submit a UAA?

Any entity desiring to modify a use may submit a UAA to DEQ. However, a UAA must be acceptable to both DEQ and EPA before it can be used as the basis for removing or modifying a use designation. The applicant should work with the approval agencies to determine the data needs. Developing UAAs can be very expensive. Moving forward with a UAA that does not adequately address the federal requirements and state guidance can result in large costs and little or no benefit for the applicant.

10. Can DEQ conduct UAAs?

Yes. However, because of the potentially high costs of producing acceptable UAAs, DEQ is more likely to focus limited resources on discussions with applicants before beginning a UAA, and in reviewing UAAs after they are submitted. In cases where DEQ conducts a UAA, DEQ will likely focus on a project area where natural conditions prevent attainment of a use or on projects where existing scientific and historical information ais already available to help answer use questions.

To example the designated uses and use categories in Idaho's water quality standards, go to the Surface Water Quality Standards (IDAPA 58.01.02) at https://adminrules.idaho.gov/rules/current/58/0102.pdf

For more information, contact Elizabeth Spelsberg at elizabeth.spelsberg@deq.idaho.gov.

Appendix B. UAA Summary Form

Summary Review of Submitted UAA

Water Body Name: Click here to enter text.

Water Body ID: Click here to enter text.

Segment Description: Click here to enter text.

UAA Developer: Click here to enter text.

Date UAA Submitted: Click here to enter a date.

Are existing uses identified? Yes ☐ No ☐

What are they? Click here to enter text.

Did the developer make a good faith effort to discover all existing uses? Yes ☐ No ☐

Comments: Click here to enter text.

Are designated uses identified? (include any presumed use criteria) Yes ☐ No ☐

Do designated uses exceed water quality criteria for existing uses? Yes ☐ No ☐

Were monitoring, quality assurance, and public involvement plans:

- Developed? Yes ☐ No ☐
- Implemented? Yes ☐ No ☐
- Documented and submitted? Yes ☐ No ☐

Were one or more factors identified as causes for nonattainment? Yes ☐ No ☐

What were they? Click here to enter text.

Was the highest attainable use identified? Yes ☐ No ☐

What was it? Click here to enter text.

Recommendation: Click here to enter text.

Reviewer: Click here to enter text.

Date: Click here to enter a date.

Appendix C. General Outline to Structure UAA

1. Introduction
2. Watershed Description and History
    - 2.1 Water Body Delineation
    - 2.2 Designated and Existing Uses
    - 2.3 Watershed-Level Characteristics
    - 2.4 Physical Characteristics
    - 2.5 Water Chemistry Characteristics
    - 2.6 Biological Characteristics
    - 2.7 Socioeconomic Characteristics
3. Case for Unattainability and Nonattainment
    - 3.1 Pollutants of Interest
    - 3.2 Point and Nonpoint Source Controls
4. Highest Attainable Uses
5. Downstream Uses
6. Outcomes
7. Appendices
    - 7.1 Quality Assurance Project Plan
    - 7.2 Data Collection and Monitoring Plans
    - 7.3 Public Involvement Plan