

Water Body Assessment Guidance, 3rd Edition:

Summary of changes from 2nd Edition

Material has been reorganized to better guide an assessor step-by-step through the assessment process. The 2nd edition was focused on assessing our own ambient data, primarily for rivers and streams; the 3rd edition expands that focus to assessing data from other sources, including outside data or data collected outside of BURP.

Section 1. Water Body Assessment Guidance Overview

This section has been rewritten to better capture the assessment process and to identify step-by-step how assessments are done. In addition, we have attempted to capture how the WBAG fits into the broader scope of DEQ's Surface Water Program.

Section 2. Water Body Types and Assessment Units

This edition provides more in-depth discussions of water body types, WBID, and Assessment Units than the 2nd edition. This expanded discussion is intended to provide greater clarity and background for assessors.

Section 3. Beneficial Use Identification for Assessment

This section describes the beneficial uses of water in Idaho (sections 3.1–3.3) and how to determine the appropriate uses to assess (section 3.4).

In the 3rd edition we clarify the hierarchical nature of coldwater and salmonid spawning aquatic life uses; if coldwater aquatic life is impaired (and salmonid spawning is either a designated or existing use), salmonid spawning is also impaired, regardless of the cause of impairment.

Salmonid spawning (SS) is considered a subcategory of coldwater aquatic life (COLD), adding a more restrictive criteria for waters where and when that use applies. Unlike the other subcategories of aquatic life uses, SS carries all of the criteria associated with COLD, with the addition of more stringent criteria. Therefore, if COLD criteria are exceeded, SS criteria must also be exceeded, regardless of the cause of exceedance. However, the inverse is not true: exceedance of SS criteria does not indicate an exceedance of COLD criteria, and therefore do not result in a listing for COLD.

This is not a change in policy, but rather a clarification of our existing policy.

Existing Use Determination- Coldwater Aquatic Life

Existing use determination for coldwater aquatic life follows the same process as outlined in the 2nd edition. However, we have updated the empirically-derived macroinvertebrate coldwater indicator taxa list based on taxa occurrence and instantaneous temperature collected through BURP through 2010.

The differences between the two empirically-derived lists are outlined below:

	WBAG II	WBAG III
Number of coldwater obligate taxa in empirically derived list	64	59
Criteria for determining obligate coldwater taxa	Taxa that were collected at sites that had stream temperatures below 19° C had their 90 th percentile of occurrence at temperatures below 19° C.	Taxa that had their 90 th percentile of occurrence at temperatures below 20° C and had their 75 th percentile of occurrence at temperatures below 13° C.
Data Source	2,607 BURP sites; 1993 – 2000	6,151 BURP sites; 1993 – 2010
Reference	Brandt, 2001.	Richards et al., 2013.

Existing Use Determination – Salmonid Spawning

The approach to determining whether salmonid spawning is an existing use is unchanged from the 2nd edition; assessors are asked to consider local and regional information to identify spawning locations and time periods. However, DEQ has included reference to *Geography and Timing of Salmonid Spawning in Idaho* (BioAnalysts 2014) as a source of updated information that can be used to determine if salmonid spawning is an existing use to be assessed.

Existing Use Determination – Recreation Uses

This edition clarifies how an assessor should distinguish between determining whether primary or secondary contact recreation is an existing use.

Determining Beneficial Uses for Assessment

In addition to describing the uses and how to determine which uses are existing uses, this edition clarifies the process an assessor should follow in order to identify uses that should be assessed.

Section 4. Monitoring Design and Data Policy

These sections are reorganized from the previous edition.

We have removed discussion of the USGS Trend Monitoring Network, and expanded our discussion of EPA’s National Aquatic Resource Surveys. We have also included reference to supplemental monitoring conducted by DEQ.

We have maintained our tiered approach to evaluating and assessing external data.

Section 5. Water Quality Criteria Evaluation and Exceedance Policy

We have expanded our discussion of how to apply our narrative criteria, specifically for sediment and nutrients. This includes more explicit guidance on what an assessor can look for to determine if there

are the three components necessary to determine a narrative criteria exceedance (source, pathway, and adverse effect to beneficial use).

This edition includes an updated appendix (Appendix F) for determining when the temperature exemption applies. It also includes expanded discussion on natural background conditions and our use of potential natural vegetation (PNV), and reference to *Concepts and Recommendations for Using the "Natural Conditions" Provisions of the Idaho Water Quality Standards* (DEQ 2003).

This edition provides updated references on location and timing of salmonid spawning. It provides expanded background and clarification on application of *E. coli* thresholds values and the proper application of the contact recreation criterion.

Toxics

This edition addresses assessment of toxic substances. Previous editions of WBAG did not address toxics; assessors instead relied upon the water quality standards to determine how to assess toxics.

This section points assessors to applicable standards and interpretation of acute and chronic criteria exceedance frequencies.

Section 6. Aquatic Life Use Support Determination

This section provides background information on the multimetric approach to assessing water quality as well as summaries of the updated ecological assessment framework (Jessup 2011). Changes to the ecological framework reflect the latest accepted science on bioassessment and benefit from 10 years of additional BURP monitoring at sites throughout Idaho.

Aquatic Life Use Support – Cold Water Aquatic Life

Generally, the approach remains unchanged:

1. Sites are monitored for indicators of ecological condition (macroinvertebrates, fish, and habitat for streams, macroinvertebrates and fish for rivers).
2. A multimetric index score is calculated for each indicator based on monitoring results.
3. Each index score is compared to index scores from minimally-impacted sites within the same site class as the site and assigned an index rating.
4. The average of index ratings for a site determines the support status of a site and the AU it represents.

However, although the general approach has not changed, much of the underlying framework has changed.

Major changes in ecological frameworks used in the 3rd edition include:

- Revised site classification system
- Revised reference sites and reference condition
- New metrics and indices

- Revised condition rating thresholds for determining support status

Site Classification

This edition uses a unified site classification scheme for all indicators (macroinvertebrates and fish for both rivers and streams, habitat for streams only). These site classes are based on level 4 ecoregions.

Previously, site classes were based on level 3 ecoregions, and there were different site classes for each indicator.

In addition, previous versions of WBAG did not include site classes for rivers; this edition includes site classes for rivers.

Reference Sites

The revised ecological assessment framework identified new reference sites based on catchment-level data, derived from GIS analysis. Previously, reference sites were identified by a combination of best professional judgment and site-level data.

This edition uses the same reference sites for all indicators; the previous edition had different reference sites for each indicator.

Metrics and Indices

New multimetric indices were developed for macroinvertebrates and fish for both streams and rivers. The stream habitat index (SHI) remained unchanged. The new metrics and indices were developed following standard, accepted methods supported by the most recent scientific literature on bioassessment.

The new multimetric indices include metric score adjustments for meaningful environmental factors such as elevation or drainage area.

In this edition, each site class had a unique multimetric index for macroinvertebrates and fish (stream habitat index remained unchanged from the previous version of WBAG). Previously, only rating criteria varied by site class. Similarly, the number of individual metrics within an index varies by site class.

Condition Rating Thresholds

This edition of WBAG has revised thresholds for assigning condition ratings for each indicator. We have changed how thresholds are applied across site classes and indicators and where in the distribution of reference site index scores the thresholds occur. In addition, we have eliminated the minimum reference threshold for macroinvertebrates and fish.

These differences are summarized in the following tables:

WBAG II	WBAG III
Thresholds consistent across site classes	Thresholds differ by site classes
Thresholds different for different indices	Thresholds consistent across different indices
Minimum threshold – site determined not full support	No minimum threshold

Macroinvertebrate Condition Rating	WBAGII	WBAGIII	
		Mountain, Foothill, All River Sites	PPBV
3	>25 th percentile of reference	>50 th percentile of reference	>50 th percentile of reference
2	10 th – 25 th percentile of reference	10 th – 50 th percentile of reference	25 th – 50 th percentile of reference
1	Minimum – 10 th percentile of reference	<10 th percentile of reference	<25 th percentile of reference
0	Below minimum of reference	*NA	*NA
Fish Condition Rating	WBAGII	WBAGIII	
		Mountain, Foothill, All River Sites	PPBV
3	>50 th percentile of reference	>50 th percentile of reference	>50 th percentile of reference
2	25 th – 50 th percentile of reference	10 th – 50 th percentile of reference	25 th – 50 th percentile of reference
1	5 th – 25 th percentile of reference	<10 th percentile of reference	<25 th percentile of reference
0	<5 th percentile of reference	*NA	*NA
Habitat Condition Rating	WBAGII	WBAGIII	
		Mountain, Foothill, All River Sites	PPBV
3	>25 th percentile of reference	>50 th percentile of reference	>50 th percentile of reference
2	10 th – 25 th percentile of reference	10 th – 50 th percentile of reference	25 th – 50 th percentile of reference
1	Minimum – 10 th percentile of reference	<10 th percentile of reference	<25 th percentile of reference

Aquatic Life Use Support – Salmonid Spawning

We have updated this section to include the interpretation of biological data for determining support of salmonid spawning. Previously, salmonid spawning support could only be determined through application of numeric criteria for temperature, dissolved oxygen, and ammonia. In this edition salmonid spawning is considered full support if BURP data indicate multiple juvenile salmonids in a water body that is fully supporting cold water aquatic life and where there are no exceedances of numeric water quality criteria.

Section 7. Contact Recreation Use Support Determination

This section has been updated to clarify that exceedance of the instantaneous threshold alone does not indicate impairment. In addition, the use of the bacteria screening procedure has been removed.

Section 8. Water Supply Use Support Determination

There is an expanded introduction to Water Supply Use and more information on how and when an assessor should assess domestic water supply.

Section 9. Wildlife Habitat and Aesthetics Use Support Determination

This section is unchanged from the previous edition.