

2 Determining Where Tier 2 Protection Applies

Tier 1 antidegradation protection applies to all jurisdictional waters and Tier 3 waters are designated by statute; therefore, the only question is which water bodies warrant Tier 2 protection. This section of the document describes the procedure for determining whether or not Tier 2 protection applies for a particular water body.

By rule, Idaho has established a water body-by-water body approach for identifying waters that will receive Tier 2 antidegradation protection. This approach uses Idaho's Integrated Report (IR) of water quality status and its supporting data. The IR and its supporting data are dynamic; therefore, each determination will be made as applications for new or reissued permits or licenses come before DEQ.

Determination of whether Tier 2 antidegradation classification applies for a certain water body is based on:

- the water body's category of use support according to the most recent federally approved Integrated Report (IR);
- the beneficial use of the receiving water body; and
- whether data indicate that the water body as a whole is of high quality.

Section 2.1 provides a brief overview of the Integrated Report. Section 2.2 describes how DEQ will determine whether or not Tier 2 protection is appropriate.

2.1 The Integrated Report and Use-support Status Categories

Every two years, DEQ is required by the federal [CWA](#) to conduct a comprehensive analysis of Idaho's water bodies to determine whether they meet state [WQS](#) and support beneficial uses or if additional pollution controls are needed. This analysis is summarized in an "Integrated Water Quality Monitoring and Assessment Report"¹ (IR; DEQ 2008), which is submitted to EPA for approval. The report serves as a guide for developing and implementing water quality improvement plans (*total maximum daily loads, or TMDLs*) to protect water quality and achieve federal and state water quality standards. An IR must be approved by the EPA before it can be used by a state to guide its management decisions.

Category 5 of the Integrated Report is equivalent to the former 303(d) list of impaired waters. This list identifies waters that do not meet all water quality standards, that is, they fail to meet at least one criterion or measure of their quality, i.e. a parameter. The list identifies the water body and the cause(s) for listing. Causes are often parameters for which the water body fails to meet a criterion or failure of the biological community to achieve benchmark scores for biological indices (see WBAG II, Grafe and others 2002).

¹ As this guidance is being developed, the 2010 Integrated Report is being considered for final approval and may be the controlling report by the time this guidance is finalized.

A TMDL must be developed for the certain parameters for which a water body is listed, unless other measures are put in place to provide the water quality improvement needed (such as category 4b).

The Integrated Report compiles available environmental data and information from all components of DEQ's surface water quality program, as well as from other agencies, organizations, companies and individuals. This data and information gives water quality managers an indication of the relative quality of Idaho's water bodies and is used to set priorities and allocate resources accordingly. All of the state's waters are classified into at least one of five different use-support categories, which correspond to the five sections of the report. The five categories are described in the following paragraphs and summarized in Table 1.

Category 1: Waters supporting all uses

Because Idaho lacks methods to assess attainment of all uses (e.g., wildlife habitat and aesthetic uses), only waters that lie completely within wilderness or roadless areas appear in category 1. Because they lack regulated pollutant sources, such waters are assumed to support all their uses and meet all water quality standards.

Category 2: Waters supporting all uses that have been assessed

Category 2 waters fully support all their beneficial uses that have been assessed, but may have other uses that are un-assessed. This occurs because Idaho does not have a method to measure attainment of some beneficial uses, (e.g., wildlife and aesthetics), or may lack data for some uses (e.g. recreation or domestic water supply). This is the case for the vast majority of waters, and so, based on monitoring results, DEQ cannot say that all uses are supported and thus the water belongs in category 1. When the data in hand does not show impairment but there is not adequate data to assess all uses, DEQ conservatively places the water in category 2.

Category 3: Insufficient data to make an assessment

Category 3 consists of waters for which DEQ has insufficient data to make a determination whether or not any uses are fully supported and water quality standards are met. DEQ's experience has been that the majority of un-assessed waters, once sufficient data is obtained, are found to be high quality². This makes sense considering that insufficient data often reflects remoteness and thus both lack of pollutant sources and difficulty in sampling.

² In the course of negotiated rulemaking in 2010, DEQ examined the change in status of 167 assessment units that were not assessed in the 2002 IR, but then were assessed for the 2008 IR when new data was available. Of the 167 2002 AUs in category 3, 92 or 55% were determined to belong in Tier 2 based on their 2008 assessments. Of the remaining 75 AUs, 58 failed to meet at least one water quality criterion but because they lacked biological data, were not classified for antidegradation.

Category 4: Waters not meeting one or more uses but not needing a TMDL

Category 4 waters fail to meet any one of the applicable water quality standards and thus do not fully support at least one applicable beneficial use. These waters do not require a TMDL be developed to correct the impairment because: 1) a TMDL has already been developed and approved; 2) they are expected to meet water quality standards due to pollution control measures other than a TMDL; or 3) impairment is due to pollution such as flow alteration or habitat alteration but not pollutant loading and thus the impairment is not amenable to a TMDL to reduce pollutant loads.

Category 5: Waters not meeting one or more uses and needing a TMDL

Like waters in category 4, category 5 waters fail to meet any one of the applicable water quality standards and thus do not fully support at least one applicable beneficial use. They do not, however, fit one of the three reasons for not needing a TMDL that would put them in category 4. Category 5 of the Integrated Report is equivalent to 303(d) lists that were prepared in the past and can also be described as a TMDL “to do” list.

Table 1. Integrated Report Categories

Integrated Report Category	Description
1	Waters ¹ with all applicable uses presumed to be fully supported. Presumption based on lack of pollution sources ²
2	Waters for which all applicable uses that have been assessed were found to be fully supported
3	Waters with no assessed applicable uses due to lack of data
4a	Waters that have an EPA approved TMDL
4b	Waters with controls other than a TMDL expected to restore all applicable uses to full support
4c	Waters for which lack of applicable use support is caused by flow or habitat alteration which is not a pollutant
5 ³	Waters for which one or more applicable uses are not fully supported, due to a pollutant ⁴

¹ The term “waters” means assessment units (AUs), subdivisions of water body units represented with WBIDs in the Idaho WQS.

² This presumption is based on these waters being located entirely within wilderness/roadless areas.

³ Category 5 is equivalent to the 303(d) list of impaired waters; a TMDL “to do” list.

⁴ While assessment is done by use, an AU is listed as impaired for a specific cause or pollutant. If any one water quality criterion is not met or any one use is not fully supported, the AU is listed in category 5 unless the cause is flow or habitat alteration and then it is listed in 4c. When a TMDL is completed, the AU is listed in category 4a for the pollutant for which the TMDL was done. Because listing and TMDL development is by pollutant, a given AU can appear in both category 5 (for one or more causes) and 4 (for a different one or more causes).

All of the State’s waters are broken into assessment units (as described in the following section), and an individual assessment unit may be classified in more than one of the above categories. This is because the Integrated Report lists by cause. For example, if a water body is listed due to temperature and flow alteration, it would be listed in Section 5 for temperature and in Section 4c for flow because flow is not a pollutant.

Water Body Units and Assessment Units

Water body units are the geographic basis for indentifying waters of Idaho and designating beneficial uses in the WQS. These units and their identification numbers (WBIDs) are based on 1:100K hydrography and break the state of Idaho up into unique non-overlapping drainage areas.

In headwaters areas, WBIDs correspond to true watersheds; that is, all surface water in a unit flows to a single point where it exits the unit. In Figure 1, this situation is exemplified by the stream labeled 003 (shown in red in the inset). Because water body units are non-overlapping by design, any unit downstream from a headwater unit has a drainage area represented by a WBID that has an entry and an exit point and is not a true watershed. This situation would correspond to the heavy green, purple, and blue lines in the inset of Figure 1. Each of these non-headwater water body units may consist of a large mainstem segment and a collection of many smaller tributaries that likely provide only a fraction of the flow in the mainstem. Water quality and uses within such a WBID may be quite varied.

This potential variation in water quality and uses within such a WBID becomes problematic when evaluating the effect that a discharge or activity might have on water quality, assessment of use support, and even designation of uses. The further removed from the headwaters a water body unit is, the more probable it is that the mainstem flow of water in and out of the unit is unlike that of the tributaries within the unit (e.g., WBID 001 in Figure 1). DEQ solved this problem for assessment purposes by using stream order (a measure of the number of tributaries upstream and thus size of a stream) to break water body units into smaller subunits for assessment; these are called assessment units. Small tributaries to larger streams, which can be very different in character but lumped in the same water body unit, are therefore separated into separate assessment units. This allows DEQ to do a better job of refining its assessment of water quality and support of uses.

WBID 001 in Figure 1 has two very different assessment units, the 001_07 assessment unit (which is a portion of the 7th-order main stem represented by the heavy blue line) and the 001_02 assessment unit (represented by the collection of light blue lines indicating 1st- and 2nd-order tributaries to the main stem). Both assessment units are part of the 001 WBID and therefore have the same designated beneficial uses, but are assessed using different methodologies since it is unlikely that 1st- and 2nd-order tributaries would have the same characteristics as the 7th order Main Salmon River. The same can be seen with the tributaries to WBID 002 (green lines) and WBID 029 (purple).

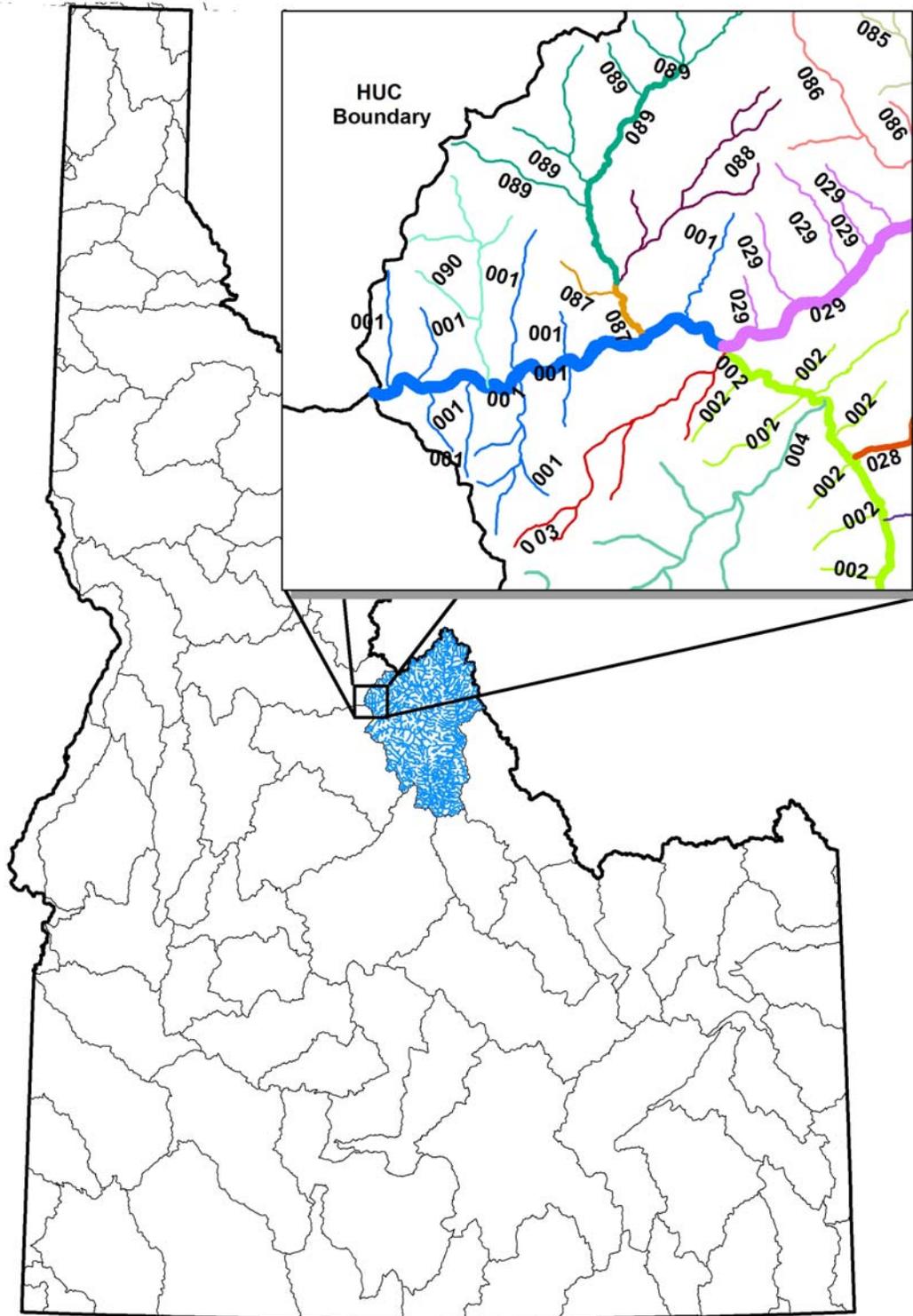


Figure 1. Map detailing WBIDs for HUC 17060203 Middle Salmon-Panther Subbasin. Inset shows how the individual waters are associated with a WBID number. WBIDs are color-coded to show the different stream segments that are part of that WBID. The size of the line corresponds to the stream order (thinner lines equate to 1st and 2nd order streams and thicker lines equate to larger order streams).

While better than undivided water body units (WBIDs), assessment units (AUs) are still not perfect since many separate 1st- and 2nd-order tributaries, draining different areas, may still be lumped together in one AU. Although these small tributaries may be in the same water body unit and thus likely to be similar in water quality condition, they may also experience different activities and discharges that differentially alter their quality. Consider again the situation represented by WBID 001 in Figure 1, and imagine that tributaries on one side of the river drain a largely roadless area with few human impacts while tributaries on the other side have impacts from recreational use (campgrounds) and timber harvest.

DEQ could subdivide AUs further but the basic problem is that we cannot afford to measure everywhere. Instead, we use data collected from specific sampling sites to infer water quality throughout an AU. It is possible that there are differences in activities and discharges within an AU and thus all water within the AU may not be of the same quality as found at the sampled sites. Even in larger streams, the location of a sampling site could reflect better or poorer water quality than the bulk of the assessment unit. We will come back to this in section 2.5 Spatial Extent of Tier 2 Protection **Error! Reference source not found.**

2.2 Assignment of Tier 2 Protection

Tier 2 antidegradation classification of a water body is based on the most recent federally approved Integrated Report, its supporting data, and the beneficial uses of the receiving water body. Furthermore, to ensure that the level of protection reflects the water quality of a water body that would be affected by a proposed activity or discharge, DEQ may also consider the representativeness of the available data.

Use of Integrated Report

When a proposed project requires an antidegradation review, DEQ will use the most recent EPA-approved version of the Integrated Report to determine which category the water body of interest is in. If necessary, DEQ will examine the Integrated Report supporting data and more recent data that may be available at the time. This evaluation is summarized in Figure 2 and Table 2.

Water Bodies Supporting Assessed Beneficial Uses

All AUs considered to be fully supporting all their applicable uses (i.e., those in category 1 of the Integrated Report) will be given Tier 2 protection for all applicable uses. All AUs found to be fully supporting their assessed applicable uses (i.e., those in category 2 of the Integrated Report) will be given Tier 2 protection for all applicable uses.

Water Bodies with Un-assessed Uses

Many waters in Idaho have yet to be assessed due to lack of suitable data at the time assessments were performed for the latest Integrated Report. Assessment units with insufficient data to make an assessment (i.e., those in category 3 of the Integrated Report) will be evaluated on a case-by-case basis as to whether they are high quality and need to be given Tier 2 protection. This evaluation will not occur until DEQ receives an application for a reissued permit with a proposed increase in discharge of pollutants, or for a proposed new discharge or activity that would degrade water quality.

All relevant information available when the activity or discharge is proposed will be used, including any new information that may be generated during the process. The determination of the appropriate level of protection will be based on information available when the activity or discharge is proposed unless the applicant agrees to gather information to help with this determination. ~~If the applicant would rather forgo data collection and agrees that the affected water is high quality (and thus warrants Tier 2 protection), DEQ will proceed on that agreement.~~

Water Bodies Not Fully Supporting Beneficial Uses or Meeting all Criteria

DEQ assesses aquatic life and recreation uses differently because there are differences in water quality requirements in the criteria as well as the pollutants. However, even though uses are assessed separately, if one use is not supported the water body is considered not fully supporting applicable beneficial uses and for the purposes of the Integrated Report is placed in Category 4 or 5.

While it may be appropriate to identify a water body as not fully supporting if it fails to meet even just one criterion, it is not considered to be consistent with antidegradation policy to dismiss protection from degradation that would affect another use that is fully supported. Therefore, for assessment units identified as not fully supporting at least one use, the rule calls for DEQ to evaluate aquatic life and recreational uses separately to determine the appropriate level of antidegradation protection.

Because applicable uses will be examined separately and there are different data requirements for evaluating each use (e.g., bioassessment data is not used in evaluating recreation uses and *Escherichia coli* data is not used in evaluating aquatic life uses), it is possible that a water body may warrant Tier 2 protection for recreation and Tier 1 for aquatic life, or vice-versa. This mixed, by-use assignment of antidegradation tiers is intended and will be resolved during the review of a proposed activity or discharge and its expected effect on water quality and applicable uses as described in section 3. Sections 2.3 and 2.4 describe how DEQ will evaluate potential degradation of aquatic life and recreation beneficial uses, respectively.

How the Integrated Report and antidegradation implementation interrelate is summarized in Table 2.

Table 2. Translation of Integrated Report Categories to Tiers of Antidegradation Protection

Integrated Report Category	Antidegradation Protection Tier
1	Tier 2 for all applicable uses
2	Tier 2 for all applicable uses
3	Tier 1 or 2, as data shows at time of antidegradation review
4a	Tier 1 for aquatic life use unless cause for listing is dissolved oxygen, pH, nutrients, sediment or temperature and bioassessment shows support of aquatic life use. Tier 1 for recreation unless water quality data show compliance with the applicable water quality criteria
4b	Same as 4a above
4c	Tier 1 for aquatic life uses. AUs in category 4c are listed for causes other than those specified in the rule and therefore do not allow for biological data to provide addition of Tier 2 protection. Tier 1 for recreation unless water quality data show compliance with the applicable water quality criteria
5	Same as 4a above

There are many causes for listing used in the Integrated Report. When determining the antidegradation tier of protection the cause identified in the Integrated Report may or may not line up exactly with one or more of the five listed parameters in the rule. Listing causes that fall in the category of nutrients include total phosphorus, total nitrogen, total Kjeldahl nitrogen, nitrogen-nitrate, nitrite/nitrate, and nutrient eutrophication. Listing causes that fall in the category of sediment include sedimentation/siltation, solids (suspended bedload), and total suspended solids (TSS). pH may be listed as either pH, pH high, or pH low. Temperature and dissolved oxygen do not have multiple listing causes associated with them.