

Surface Water Ambient Monitoring Plan

Second Edition

2011–2020



State of Idaho
Department of Environmental Quality



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Prepared by
Jason Pappani
Monitoring and Assessment Coordinator
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

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1 Introduction

The *Surface Water Ambient Monitoring Plan* (AMP) is the Idaho Department of Environmental Quality's (DEQ's) framework for collecting ambient surface water data to meet Clean Water Act (CWA) and agency goals. Ambient monitoring data are used to support the development of water quality criteria, report on the condition of the state's waters, identify impaired waters, and support development of subbasin assessments. Specifically, the AMP supports development of the Integrated Report, which describes the condition of Idaho waters, lists waters not meeting water quality standards (impaired waters), and identifies waters requiring total maximum daily loads (TMDLs). The AMP is a dynamic strategy that is adapted to meet new monitoring needs as changes occur in available resources, technology, agency priorities, and regulatory requirements.

The purpose of this document is to provide internal guidance to DEQ staff regarding the monitoring objectives and priorities of the ambient monitoring program. Moreover, this document communicates DEQ's monitoring approach to other state and federal agencies, nongovernmental organizations, and the general public. DEQ intends to improve communication of monitoring results, coordinate with other monitoring agencies, and establish partnerships that result in the efficient use of monitoring resources.

This plan is the second edition of the AMP. The first edition planned activities for the 2004–2008 field seasons (Grafe 2004) and focused on plans for monitoring given existing resources at that time. Updates to the AMP in this second edition include plans for monitoring activities from 2011–2020, identification of programmatic goals, plans for addressing data gaps, updated resource allocations, and needs for implementation. This edition will identify plans for all monitoring needs, regardless of resource availability.

1.1 Overview of the Surface Water Program

DEQ's Surface Water Program implements most of the CWA requirements. Figure 1 provides an overview, within the context of the CWA framework, of how monitoring is a foundational component of the surface water quality program.

DEQ's Surface Water Program has four major components: (1) water quality standards, (2) monitoring and assessment, (3) Integrated Report (§303(d)/§305(b)), and (4) TMDLs. These components are dependent upon one another and all are necessary for implementing the CWA.

Water quality standards designate beneficial uses and criteria designed to ensure that those uses are met. Monitoring and assessment activities collect data from water bodies to evaluate whether or not the designated beneficial uses and criteria are met. The Integrated Report provides the vehicle for reporting monitoring and assessment results and detailing what uses aren't being supported and what criteria are exceeded. For water bodies not meeting standards, a TMDL is prepared, which documents in detail what actions should be taken for the water body to meet its designated beneficial uses and water quality criteria.

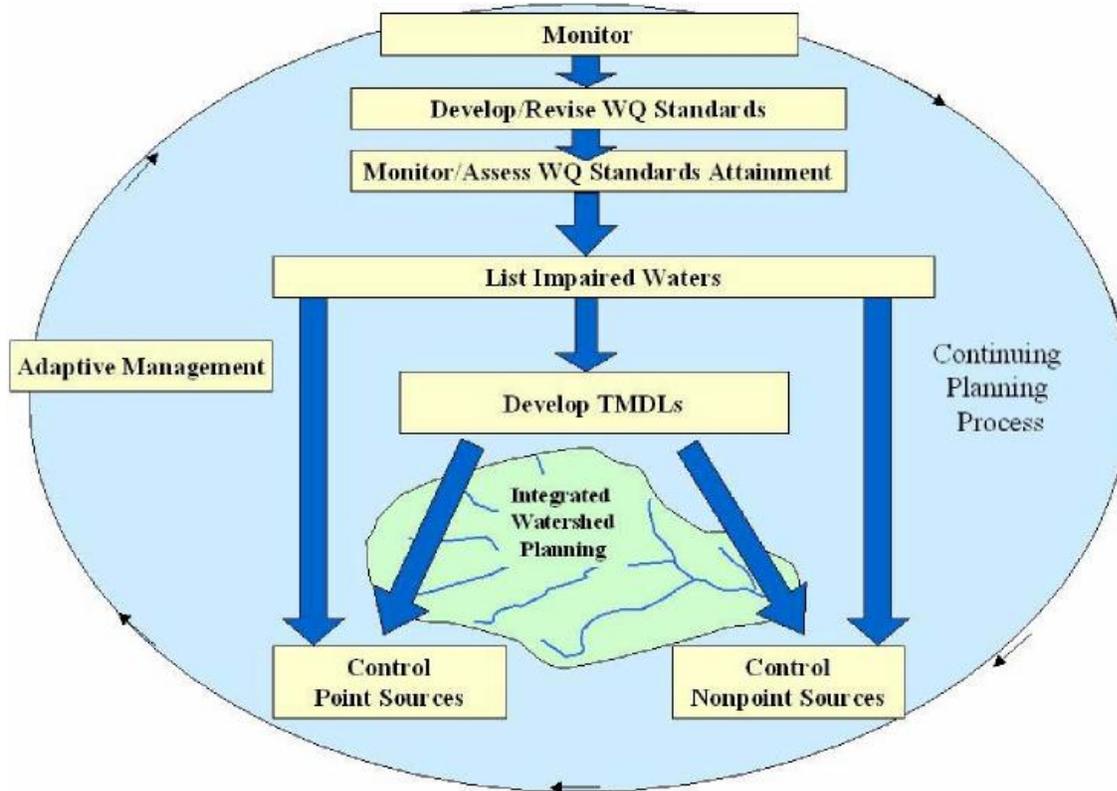


Figure 1. Relationship of monitoring to other water programs within the context of the Clean Water Act.

1.2 Ambient Monitoring and the Clean Water Act

In 1972, Congress passed Public Law 92-500, the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA). The goal of this act was to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (Water Pollution Control Federation 1987). The federal government, through the US Environmental Protection Agency (EPA), assumes the dominant role in defining and directing water pollution control programs across the country. DEQ implements the CWA in Idaho, while EPA provides oversight of Idaho’s fulfillment of CWA requirements and responsibilities.

1.2.1 The Integrated Report

The AMP primarily addresses federal requirements found in Sections 303 and 305 of the CWA. Under Sections 303 and 305, DEQ prepares an Integrated Report to describe the condition of Idaho waters (§305(b)) and identify water bodies not meeting water quality standards, or impaired waters (§303(d)). The Integrated Report classifies all state water into five categories. Appendix A provides a description of the different reporting categories of the Integrated Report from Wayland (2001).

Section 303 requires DEQ to monitor waters and specifically identify those not supporting beneficial uses. These impaired waters are placed in Category 5 of the Integrated Report and require further analysis performed under a TMDL (discussed below). A TMDL must be prepared

for each pollutant impairing the water body. Based on this information, designated state and federal agencies collaborate to set appropriate controls to improve water quality and ensure water bodies meet their designated uses.

Section 305 requires a general description and analysis of the water quality condition of all Idaho waters. “Condition” is defined as the extent to which state waters are meeting water quality standards. Unlike reporting under §303, reporting under §305 does not designate whether a particular water body is meeting water quality standards, but rather what proportion of the state’s water bodies are meeting water quality standards.

The AMP also addresses CWA §106(e)(1), which authorizes EPA to provide federal assistance to state agencies to establish and implement ongoing water pollution control programs. CWA §106 also requires EPA to determine that a state is monitoring the quality of navigable waters, compiling and analyzing data on water quality, and including results in the state’s §305(b) report prior to the award of §106 grant funds. More information regarding water pollution control grants may be found at <http://www.epa.gov/owm/cwfinance/pollutioncontrol.htm>.

In 2003, EPA distributed recommendations regarding basic elements of a state water monitoring program. *Elements of a State Water Monitoring and Assessment Program* (EPA 2003) serves as a tool to help EPA and states determine whether a monitoring program meets the prerequisites of CWA §106(e)(1). One of the components detailed in the EPA document is encouraging states to embark upon a long-term process to incrementally improve their monitoring programs and eventually address all state waters.

By implementing this plan, DEQ will address the goal of reporting the condition of all state waters within 10 years.

1.2.2 Total Maximum Daily Loads

A TMDL is a numerical pollutant budget, but it also commonly refers to the written, quantitative assessment of water quality problems and contributing pollutant sources. The document contains the statement of loads and supporting analyses, and it often incorporates TMDLs for several water bodies and/or pollutants within a given watershed. The TMDL document provides a plan to improve water quality by limiting pollutant loads and is developed for impaired waters listed in Category 5 of the Integrated Report. In Idaho, the TMDL document consists of two main sections: the subbasin assessment and the load allocation. The subbasin assessment uses ambient and other monitoring data to evaluate and summarize current water quality status, pollutant sources, and control actions to date.

1.2.3 DEQ’s Monitoring and Assessment Program

DEQ has found that one of the most efficient monitoring strategies to evaluate aquatic life is directly measuring the biological condition of the water body, a strategy known as bioassessment. Thus, DEQ has historically focused ambient monitoring efforts on bioassessment. DEQ conducts ambient monitoring through the Beneficial Use Reconnaissance Program (BURP). In addition, DEQ has partnered with EPA in its National Aquatic Resource Surveys

(NARS). Descriptions of BURP and NARS are provided below along with a brief description of DEQ’s data analysis and assessment methodology.

1.2.4 Beneficial Use Reconnaissance Program

In 1993, DEQ implemented BURP. BURP is an ambient monitoring program aimed at integrating biological and chemical monitoring with physical habitat assessment as a way of characterizing water quality (McIntyre 1993). BURP mainly addresses small streams and large rivers, and the program closely follows concepts and methods described in EPA’s *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers* (Barbour et al. 1999).

BURP provides consistent ambient monitoring data for beneficial use support assessments. BURP efforts have focused primarily on wadeable streams; however, monitoring protocols and assessment methodologies for rivers have been developed. Efforts to develop standard monitoring and assessment methodologies for lakes and reservoirs (hereafter referred to collectively as lakes) are underway. Refining river monitoring and assessment methods and developing monitoring and assessment methods for lakes will enable DEQ to work toward the goal of reporting the condition of all state waters.

1.2.5 National Aquatic Resource Surveys

EPA has initiated NARS (formerly the Environmental Monitoring and Assessment Program, or EMAP), to provide reports on the condition of water bodies using standardized protocols and probabilistic survey designs. NARS monitoring occurs on a 5-year rotation by resource type (Table 1).

Table 1. Schedule of National Aquatic Resource Surveys, 2011–2020, by resource type.

	2011/2016	2012/2017	2013/2018	2014/2019	2015/2020
Wetlands	Monitor	Analyze Data	Report	Research	Design
Lakes	Design	Monitor	Analyze Data	Report	Research
Rivers	Research	Design	Monitor	Analyze Data	Report
Streams	Report	Research	Design	Monitor	Analyze Data
Coastal ^a	—	—	—	—	—

^a Idaho does not participate in the coastal surveys.

Each resource type is monitored every 5 years under the NARS rotation. Intervening years are dedicated to data analysis, drafting and publishing a report of the findings, research and development of existing and new methodologies, and survey design and logistics.

1.2.6 Data Analysis and Assessment

DEQ uses the *Water Body Assessment Guidance* (WBAG) to assess data and determine beneficial use support of Idaho water bodies (Grafe et al. 2002). A water body assessment entails analyzing and integrating multiple types of water body data to evaluate water body impairment for different use categories (including aquatic life and contact recreation), determine the degree of biological integrity, and compile descriptive information about the water body.

Although the WBAG was designed primarily to assess BURP data, DEQ also evaluates existing and readily available data from other sources. Specifically, DEQ evaluates the scientific rigor and relevance of non-BURP data to determine where and how it will be incorporated into the assessment process and other water quality decisions. DEQ uses a tiered approach to provide consistent weighting and consideration of various types of data. (Appendix B summarizes the three tiers, provides examples of different data types in each tier, and describes how DEQ uses different tiered data for planning and reporting purposes.)

The WBAG also describes DEQ's methods for stratifying (classifying data by stream order and land use) and comparing data for use support determinations. Specifically, Section 2 of the WBAG explains the Idaho water body identification (WBID) system and assessment unit (AU) structure used to extrapolate and interpret data (Figure 2).

A WBID usually represents a small watershed and is used in Idaho's water quality standards to geolocate waters in the state. The scale of a WBID is generally comparable to a 6th-field watershed—12-digit hydrologic unit code (HUC)—although some may be larger or smaller. The AU is a mechanism for grouping waters within a WBID into a meaningful unit for assessment purposes only. Most AUs are grouped based on stream order and land use; however, DEQ staff have the option to further delineate AUs based on additional information. Therefore, the number of WBIDs in Idaho is presently a fixed total, whereas the total number of AUs will continue to change based on current and future assessment decisions. The AU is DEQ's reporting unit (i.e., the §303(d) report to EPA designates beneficial use support status, or compliance with water quality standards, by AU).

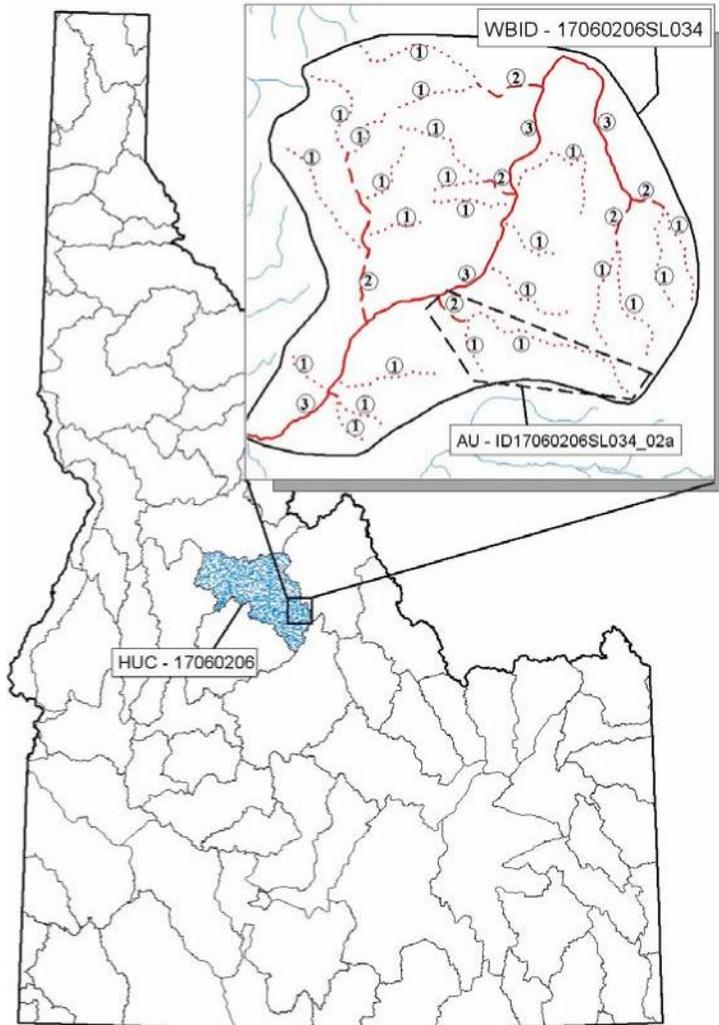


Figure 2. Example of the scale differences for DEQ’s reporting units. WBIDs (17060206SL034) are located within HUCs (17060206); assessment units (ID17060206SL034_02a) are contained within WBIDs. The circled numbers indicate individual stream orders.

2 How the Ambient Monitoring Plan Supports DEQ’s Mission, Goals, and Monitoring Objectives

DEQ’s mission is “to protect human health and preserve the quality of Idaho’s air, land, and water for use and enjoyment today and in the future” (DEQ 2001). The AMP supports this mission by presenting a monitoring framework that bases DEQ surface water decisions on quality data and assisting DEQ in protecting Idaho’s water. Additionally, one of DEQ’s guiding principles is to “rely on science and common sense to guide decisions and achieve results” (DEQ 2001). The AMP provides a framework to collect quality data appropriate for the questions being asked.

For example, in making decisions concerning the status of Idaho’s waters, DEQ uses data that are scientifically rigorous and relevant (see Appendix B for definitions of Tier I, II, and III data).

DEQ uses Tier I data to develop the Integrated Report, while Tier II and III data are used in other water quality decisions, including monitoring planning. This guidance allows DEQ to have greater confidence in water quality decisions.

The AMP is also focused on building partnerships with federal agencies, other state agencies, tribes, communities, and businesses. In this way, the AMP supports DEQ’s vision to “assess, sustain, preserve, and enhance environmental qualities in partnership with communities and businesses, and in concert with the economic vitality of the state” (DEQ 2001).

DEQ has focused ambient monitoring resources on developing a technically sound monitoring and assessment program for Idaho’s streams and rivers. This focus on streams and rivers is used within the AMP because most of Idaho’s surface water consists of streams and rivers. However, DEQ recognizes that other water body types—such as lakes, reservoirs, intermittent streams, springs, and wetlands—also require monitoring. This AMP attempts to address these data gaps, but full implementation is dependent upon resource availability.

2.1 Objectives of Ambient Monitoring

DEQ has specific objectives that shape the design of the monitoring plan, as described below.

2.1.1 Determine the Condition of Idaho Waters (Statewide Assessments)

One of DEQ’s primary goals is to meet CWA requirements. An important CWA requirement is to report on the condition of all Idaho waters (the §305(b) report, included in the Integrated Report) to EPA, who incorporates this information into a national report for Congress.

To ensure that Idaho data can be effectively used in a national report, DEQ reviewed other monitoring programs—such as those in Florida (Biernacki 1999), North Carolina (North Carolina DENR 2000), Oregon (Oregon DEQ 2001), South Carolina (South Carolina DHEC 2002), and Washington (Ward 2001)— and various other resources, such as *Exploring the Connection Among WQS, 305(b) Reports and 303(d) Lists* (CALM 2000), *Building a Framework for the Future* (NWQMC 2002), and *The Condition of Our Nation’s Streams and Rivers from the Mountains to the Coast* (Sutfin 2002). Other state agencies have turned to a random survey design to comprehensively answer questions concerning the condition of state waters. To determine the condition of Idaho waters, a monitoring plan must be designed to broadly address the entire state and different types of water bodies.

DEQ has employed random surveys to produce statewide assessments of rivers and streams (Kosterman et al. 2008) and lakes (Kosterman 2010) through cooperation with EPA’s NARS. In addition, DEQ began probabilistic monitoring of wadeable streams in 2005. Results from 4 years of monitoring were reported in the 2010 Integrated Report (DEQ 2011). Continuing probabilistic surveys will allow DEQ to continue to address this statewide condition reporting requirement of the CWA, and continued participation in these surveys will allow DEQ to efficiently and cost-effectively supplement survey data in order to produce statistically valid statewide assessments of aquatic resources.

2.1.2 Determine the Condition of Waters with Insufficient Data (Unassessed AUs)

Historically, DEQ's census approach resulted in some data gaps. Addressing these data gaps is a priority of this plan. Consequently, the AMP incorporates a random sampling design to allow greater extrapolation of data and interpretation of water quality conditions. Such broad analysis reduces the number of water bodies with insufficient data and helps target future monitoring efforts. In addition to probabilistic monitoring, the AMP emphasizes monitoring AUs that are in Category 3 of the Integrated Report (unassessed AUs) to provide baseline data for listing decisions and proposed permitted activities and to move water bodies out of Category 3.

2.1.3 Determine Waters that are Impaired and Require a TMDL (Listing Decisions)

A more specific objective is based on CWA requirements for the §303(d) list and TMDLs. The monitoring plan must provide a plan to collect data specific enough to determine which waters in Idaho are impaired and indicate whether there is a basis for requiring a TMDL for a specific water body. The data must also be capable of supporting a determination of the extent of impairment so that DEQ can prepare TMDLs as efficiently as possible.

2.1.4 Identify the Expectations (Reference Condition) for Idaho Waters and Monitor Trends in Water Quality

To assess water quality status, DEQ must use benchmarks or reference sites for comparison purposes. These reference sites set water quality expectations for different types of water bodies located in different regions of the state. For chemistry data, numeric criteria often set the benchmark for water quality conditions. However, for biological and physical data, DEQ uses the biological condition of minimally disturbed water bodies to set the reference condition that other water bodies are then compared against.

Under the AMP, DEQ regularly monitors reference benchmarks to understand biological and physical changes due to natural conditions. DEQ has identified a reference/trend network of sites for stream monitoring and plans to supplement this network with additional sites.

2.1.5 Develop a Lake Monitoring and Assessment Methodology

Currently, DEQ does not have an ambient lake monitoring program. Using data and experience gained through participation in the EPA 2007 National Lakes Assessment (EPA 2009) and the statewide lakes assessment (Kosterman 2010), DEQ will develop a methodology for monitoring and assessing lakes in Idaho. DEQ can use results and recommendations from the statewide lakes assessment to refine field monitoring techniques.

One of the priorities for further development of a lake monitoring and assessment methodology is developing an assessment framework. To properly classify lakes and set thresholds, DEQ must first identify reference (or least-impacted) lake condition and impacted lake condition for metric calibration. This plan lays out a process and schedule for achieving these goals.

2.1.6 Continue Streamlining Data Acquisition Process

Beginning in 2010, DEQ began collecting stream monitoring data with electronic field forms. Collecting field data in an electronic format significantly decreases the time needed for data entry and validation and reduces the probability of transcription errors. DEQ is committed to collecting data electronically for future monitoring projects.

2.1.7 Continue Developing Database and Assessment Tools

DEQ has begun developing an integrated surface water database for housing all surface water data and providing assessment and reporting tools. Continued development and maintenance of this infrastructure is crucial to the monitoring program. These tools will improve the availability of data and assessment results to the general public.

3 Meeting the Objectives of Ambient Monitoring

Full implementation of the following strategy will address the monitoring objectives outlined above. DEQ divides monitoring responsibilities among its six regional offices and the state office. In addition, DEQ performs monitoring in conjunction with EPA's NARS. Historically, regional office field crews have focused monitoring efforts on wadeable streams, while state office crews have focused on rivers and lakes or pilot projects designed to address specific monitoring objectives.

3.1 Monitoring Schedule, 2011–2020

The 2011–2020 monitoring schedule displays the monitoring priorities for regional and state office field crews and the NARS monitoring schedule for the next 10 years (Table 2). By adhering to this schedule, DEQ will be able to begin regular reporting of stream, river, lake, and wetland condition by 2018.

Table 2. Ambient monitoring schedule, 2011–2020. This schedule lays out the plan for monitoring to be performed by DEQ's regional offices, state office, and through cooperation with EPA for the National Aquatic Resource Surveys (NARS).

Year	Regional Offices	State Office	NARS
2011	Streams	Lakes and Wetlands ^a	Wetlands
2012	Streams	Lakes ^b	Lakes
2013	Streams	Rivers ^c	Rivers
2014	Streams	Rivers ^d	Streams
2015	Streams	Lakes	—
2016	Streams	Wetlands ^a	Wetlands
2017	Streams	Lakes ^b	Lakes
2018	Streams	Rivers ^c	Rivers
2019	Streams	Lakes	Streams
2020	Streams	Rivers	—

^a For 2011 and 2016, DEQ plans to supplement the NARS to provide sufficient data to produce a statewide wetland assessment.

^b For 2012 and 2017, DEQ plans to supplement the NARS to provide sufficient data to produce a statewide lakes assessment.

^c For 2013, and 2018, DEQ plans to supplement the NARS to provide sufficient data to produce a statewide rivers assessment.

^d For 2014, DEQ plans to monitor candidate reference rivers.

Further discussion of this schedule and the objectives to be met, by resource type, is provided below.

3.2 Streams

DEQ classifies flowing water as streams if they meet two of the following three criteria: (1) stream order is 4th or lower; (2) general wetted width at the reach is less than 15 meters; and (3) average depth for the reach is less than 0.4 meters. Conversely, if the water body exceeds any two of these three criteria it is classified as a river (Grafe et al. 2002).

By this definition, streams comprise the majority of water, by length, within Idaho. Thus, stream monitoring has been the primary focus for ambient monitoring and will continue to be under this edition of the AMP. Stream monitoring under this AMP will be designed to address several objectives. Probabilistic monitoring of wadeable streams will continue in order to produce statistically valid reports of statewide condition and to monitor general trends in water quality throughout Idaho. Also, targeted monitoring will address unassessed AUs, permit applications requiring background data, and water bodies of local interest. DEQ will continue to monitor sites within the reference/trend network to address natural variability and provide data for refining our reference condition.

Stream monitoring will continue to be performed by each regional office, with an expected total of 300 sites monitored annually statewide. Table 3 details the number of sites, by site type, to be monitored by each of the six regional offices.

Table 3. Expected number of stream sites, by site type, to be monitored annually by each regional office.

Site Type	Number of Sites per Year per Regional Office	Total Number of Sites (Statewide) per Year
Probabilistic	5	30
Targeted—(Unassessed AUs and Regional Priorities)	40	240
Reference/Trend	5	30
Total	50	300

Adherence to this schedule will allow DEQ to provide sufficient data to meet the above objectives of ambient monitoring for streams. Every integrated reporting cycle (every 2 years) we will have 60 probabilistic sites for producing a statewide stream assessment, approximately 240 targeted sites, and 60 reference sites for monitoring natural variability and augmenting our reference data set.

3.3 Rivers

DEQ has protocol and a framework for assessing river data; however, river data are lacking, particularly for river reference condition. To further refine river assessment metrics and geographical classification, we need to first augment our reference data set. Under this AMP, DEQ will monitor approximately 25 potential river reference sites in 2014 in order to fulfill this need.

In 2020, rivers will be monitored following a probabilistic survey design. In addition, DEQ plans to supplement the NARS in 2013 and 2018 to provide sites sufficient for a statewide condition assessment.

Adherence to this schedule will allow DEQ to meet the above objectives of an ambient monitoring program. River reference condition will be addressed by 2014. Probabilistic monitoring in 2013, 2018, and 2020 will provide data necessary for listing decisions and a statewide report of river condition.

3.4 Lakes and Reservoirs

DEQ plans to develop a lake monitoring and assessment program. By monitoring reference sites in 2011 and impacted sites in 2012, DEQ will have sufficient data for developing and calibrating lake assessment metrics. Lakes will then be monitored probabilistically in 2015, 2017 (in conjunction with the NARS for lakes), and 2019. Probabilistic lake monitoring will be used for listing decisions and statewide assessment of lakes.

3.5 Wetlands

DEQ does not have immediate plans to begin addressing wetland monitoring as a state program. However, DEQ plans to leverage NARS assessments of wetlands in 2011 and 2016 to acquire data necessary to produce statewide assessments of wetland condition.

3.6 Reporting Schedule, 2011–2022

DEQ is required to submit an Integrated Report to EPA every 2 years. As described in section 1.2.1, the Integrated Report includes the §303(d) list of impaired waters and a §305(b) condition report. By following the schedules above (Table 2 and Table 3), DEQ will be able to report regularly on statewide condition of streams, rivers, lakes, and wetlands and will be able to make listing and delisting decisions for streams, rivers, and lakes as part of the Integrated Report (Table 4).

Table 4. Schedule of data to be included in DEQ's biennial Integrated Report to EPA, 2011–2022. Includes the years that data are reported for each Integrated Report.

Integrated Report	Data Reporting Years	Data to be Reported
2012	2010	Statewide streams condition assessment—§305(b)
2014	2011–2012	Streams—§303(d) Statewide streams condition assessment—§305(b) Statewide wetland condition assessment—§305(b)
2016	2013–2014	Streams, lakes, rivers—§303(d) Statewide streams condition assessment—§305(b)
2018	2015–2016	Streams, lakes—§303(d) Statewide streams condition assessment—§305(b) Statewide lakes condition assessment—§305(b) Statewide wetlands condition assessment—§305(b)
2020	2017–2018	Streams, lakes, rivers—§303(d) Statewide streams condition assessment—§305(b) Statewide lakes condition assessment—§305(b) Statewide rivers condition assessment—§305(b)
2022	2019–2020	Streams, lakes, rivers—§303(d) Statewide streams condition assessment—§305(b) Statewide lakes condition assessment—§305(b) Statewide rivers condition assessment—§305(b)

4 Resources Available for Ambient Monitoring

DEQ personnel necessary for plan implementation include staff from the state program office, six regional offices, technical services, and information technology (IT). The regional offices implement programs while the state office develops and oversees programs. Technical services staff assists with implementation, providing technical expertise as requested. IT staff assist with database development and maintenance and tool development.

4.1 Personnel Available

For state fiscal year (SFY) 2008 (July 2007–June 2008), DEQ dedicated approximately 14.75 full time equivalents (FTEs), or 30,680 person-hours, to monitoring and assessment. This effort included 6 regional office coordinators, 1 state office coordinator, 18 state temporary

employees serving as seasonal field crew members, technical services staff providing support through GIS, and IT staff providing database development and data entry.

However, due to budget cuts in SFY 2009 and SFY 2010, these allocations were reduced to 3.84 FTEs, or approximately 7,980 person-hours, reflecting a 74% reduction in personnel dedicated to monitoring and assessment. The budget reductions in SFY 2009 and SFY 2010 BURP regional office coordinators were shifted to other surface water programs. BURP regional office coordinator staffing is transitioning into part time work with duties being shared with TMDL program. Consequently the level of effort for BURP coordination in the regional offices has been reduced.

For SFY 2012, resources were partially restored to 7.3 FTEs, or approximately 15,184 person hours. Resources were maintained at this level in SFY 2013 with continued funding from the water pollution control account. The BURP monitoring level of effort has stabilized at one (1) field crew of three (3) temporary staff in each regional office being directed by a part time BURP coordinator. The state office also has one (1) field crew of three (3) temporary staff. The state office temporary staffing is to support the large river and lake sampling portions of the AMP. This level of effort is sustainable into the future with existing funding.

The personnel available to implement this plan are approximately 9.95 FTEs dedicated to monitoring and assessment (Table 5). These FTEs will be divided among the six regional offices, the state office, and technical services and IT staff .

Table 5. Approximate full time equivalents (FTEs) and associated person-hours available to implement the ambient monitoring plan.

	FTEs	Person-Hours
Streams (Regional Office)		
Coordinators (6 at 1/3 time)	2	4,160
State Temps (3/office)	4.5	9,360
Streams/Rivers/Lakes/NARS (State Office)		
Coordinator	1.3	2,704
State Temps (3/office)	0.75	1,560
Support Staff (Technical Services/IT)	1.4	2,940
Total	9.95	20,724

4.2 Operating Available

In addition to personnel costs, DEQ requires allocation of resources to cover the operating costs of the monitoring and assessment program. Operating costs include sample analysis, per diem and lodging associated with field monitoring, equipment replacement and maintenance, supplies, safety and first aid training, and other costs associated with field monitoring of aquatic resources.

In SFY 2008, DEQ allocated \$348,000 to operating for monitoring and assessment. This allocation was solely for streams monitoring.

In SFY2012, allocations to the monitoring and assessment program have been reduced to \$194,000 due to budget cuts, reflecting a 44% decrease in operating resources from SFY2008 levels.

The operating dollars available to implement this plan are approximately \$206,000 of state funds for annual operating expenses (Table 6). Operating expenses for NARS are provided by EPA through grant agreements and in-kind contributions.

Table 6. Estimated operating expenses available to implement the ambient monitoring plan, including federal funds provided in support of the annual National Aquatic Resource Surveys (NARS).

	State-Funded Operating Expense	Federally Funded Operating Expense
Regional Office (Streams) and State Office (Rivers/Lakes)	\$206,000	
State Office (NARS)		\$150,000
Total	\$206,000	\$150,000

Due to the realities of resource availability discussed above, it is important that DEQ prioritizes how it will implement components of this plan. This plan and DEQ’s monitoring and assessment program are necessary for DEQ to meet its CWA obligations; specifically, the monitoring and assessment program provides the data necessary for developing DEQ’s Integrated Report. Full implementation of this plan will provide those data, address existing data gaps, and improve overall efficiency of the program.

5 Summary

The AMP is DEQ’s plan for collecting data to meet CWA and agency goals. Ambient monitoring data collected in accordance with this plan can be used to:

- support the development of water quality criteria
- support development of the Integrated Report; report on the condition of the state’s waters, identify impaired waters, and identifies waters requiring total maximum daily loads (TMDLs)
- support development of subbasin assessments

The AMP is a dynamic strategy that is adapted to meet new monitoring needs as changes occur in available resources, technology, agency priorities, and regulatory requirements.

This document provides internal guidance to DEQ staff regarding monitoring objectives and priorities and communicates DEQ's monitoring approach to other state and federal agencies, nongovernmental organizations, and the general public.

Implementation of this plan will ensure DEQ meets the Objectives of Ambient Monitoring for all surface water, and that DEQ will be able to report regularly on the condition of streams, rivers, and lakes as part of the Integrated Report.

In order to fully implement this plan DEQ will need to allocate additional personnel and operating resources to monitoring.

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Appendix A. Integrated Report Categories

The following text is excerpted from the *2010 Integrated Report*.

The Five Categories of the Integrated Report

Information used in preparing the Integrated Report is compiled by DEQ using EPA's *Assessment Database* (ADB). The ADB provides an all-electronic report organized into five categories, each of which is numbered in accordance with the five categories defined under "The Integrated Report Categorizes State Waters," page 2, and detailed below.

Category 1: Waters of the State Wholly within Designated Wilderness or Inventoried Roadless Area Where Standards are Presumed to be Attained

Category 1 waters are wholly within a designated wilderness or inventoried roadless area where water quality standards are presumed to be attained for all beneficial uses. (See "Designated Wilderness and Inventoried Roadless Areas", page 31, for definitions and an explanation.)

Note: The only distinction between Category 1 and Category 2 of the Integrated Report is the wilderness and roadless status.

The number of assessment units (AUs) currently in Category 1 is 427 out of 5,746 total AUs statewide. There are 4,797 miles of rivers and 2,185 acres of freshwater lakes that are attaining all water quality standards and are wholly within wilderness or roadless areas. This count of AUs is based on a review of updated wilderness and roadless geographic information system (GIS) coverage made available by the U.S. Forest Service (USFS) since the 2008 Integrated Report.

An additional 181 AUs have been identified for inclusion in Category 1, but ADB will not be updated with these changes until the 2012 reporting cycle. These AUs will remain in Category 3 until that time. Refer to Appendix B for the list of newly added wilderness/roadless AUs.

The list of Category 1 AUs can be viewed in Appendix C.

Category 2: Waters of the State Attaining Some Standards

Category 2 waters fully support those beneficial uses that were assessed. For these water bodies, no Tier I data (see "Data Quality," page 17, for a description of data tiers) submitted to DEQ for assessment indicates impairment.

The number of AUs currently in Category 2 is 1,251 out of 5,746 total AUs statewide. There are 23,097 miles of rivers and 19,849 acres of freshwater lakes that are attaining most standards.

The list of Category 2 AUs can be viewed in Appendix D.

Category 3: Waters of the State with Insufficient Data and Information to Determine if Any Standards are Attained

Category 3 water bodies meet two criteria:

- No Tier I data indicate an impairment of beneficial uses.
- Not enough data existed at the time of assessment to make a determination using DEQ's WBAG II (Grafe et al. 2002) that standards have been attained.

When DEQ concludes that the available data and information is insufficient, reasons may include (but are not limited to) the following:

- The existing and readily available data and information were collected using unacceptable quality assurance / quality control procedures.
- The quality of the existing and readily available data and information, regardless of quantity thresholds, is inadequate to provide an accurate assessment.
- The existing and readily available data and information is not representative of current conditions of the water body. This rationale might include a determination that significant land-use changes have occurred in the watershed changing the hydrology and nonpoint source loading, point source discharges have been removed, new discharges are now operating, or the locations of sampling stations did not reflect the character of the segment (e.g., sampling may have been limited to locations near discharge outfalls).

Category 3 is meant to be temporary until sufficient data and information are obtained to support a designated use attainment determination; however, in Idaho an AU may remain in Category 3 under any of the following circumstances: 1) the stream has no flow when visited by DEQ (i.e., is intermittent), 2) access to the monitoring site was denied, or 3) the monitoring site is inaccessible.

When DEQ encounters any of these circumstances, every attempt will be made in subsequent years to collect sufficient data and information to support a designated use attainment determination for these AUs.

The number of AUs currently in Category 3 is 2,102 out of 5,746 total AUs statewide. There are 33,355 miles of rivers and 186,677 acres of freshwater lakes that have insufficient data or information to determine if standards are being met.

The list of Category 3 AUs can be viewed in Appendix E.

Category 4: Waters of the State Impaired for One or More Standards for One or More Beneficial Uses but Not Requiring the Development of a Total Maximum Daily Load

Category 4 water bodies are grouped into one of three subcategories: 4a, 4b, or 4c. Each of these subcategories is described in the following sections.

Category 4a—Total Maximum Daily Load Completed and Approved

Impaired water bodies are placed in Category 4a when a TMDL is developed by DEQ and approved by EPA such that, when implemented, full attainment of the water quality standards is expected for the specific impairment (e.g., sediment) for which the TMDL was developed. If the water body has any other impairment(s), then it may be included in other categories of the Integrated Report also.

Once the EPA has approved a TMDL, an implementation plan is developed. An implementation plan, guided by an approved TMDL, provides details of the actions needed to achieve TMDL-specified load reductions, outlines a schedule for those actions, and specifies monitoring needed to document action and progress toward meeting water quality standards. Additional information on TMDL implementation plans is on the following DEQ website:

<http://www.deq.idaho.gov/tmdl-implementation-plans>

The number of unique AUs currently in Category 4a is 1,260 out of 5,746 total AUs statewide. There are 20,485 miles of rivers and 148,324 acres of freshwater lakes that have an approved TMDL.

The list of Category 4a AUs can be viewed in Appendix F.

Category 4b—Waters of the State That Have Pollution Control Requirements in Place, Other Than a TMDL, and Are Expected to Meet Standards

Impaired water bodies may be placed in Category 4b when other pollution control requirements (e.g., best management practices) required by local, state, or federal authority are stringent enough to achieve applicable water quality standards (pursuant to 40 CFR 130.7(b)(1)) within a reasonable period of time. When adequate pollution control requirements are established on an impaired water body, this action obviates the need for a TMDL.

For a water body to be considered for Category 4b, the following 6 elements must be addressed in the 4b rationale:

1. Identification of stream segment and statement of problem causing the impairment
2. Description of pollution controls and demonstration of how they will achieve water quality standards
3. An estimate or projection of the time when water quality standards will be met
4. Schedule for implementing pollution controls
5. Monitoring plan for tracking effectiveness of the pollution controls
6. Commitment to revise pollution controls as necessary

Each AU listed in Category 4b will be reviewed by EPA and DEQ according to the Category 4b rationale during each integrated reporting cycle to ensure that a water body that has been placed in Category 4b is still meeting all the proposed pollution control requirements. If it is determined that circumstances have changed and the requirements of the original 4b demonstration are no longer being met, DEQ may place the water body back into Category 5.

The number of unique AUs currently listed in Category 4b is 4 out of 5,746 total AUs statewide. There are 51 miles of rivers that have alternative pollution controls in place. All 4 of these AUs are addressed in the *Bear Valley Creek 4b Justification* (DEQ and USFS 2010).

The *Bear Valley Creek 4b Justification* and supporting documentation have been posted to the Middle Fork Salmon River subbasin assessment and TMDL web page and are also included as Appendix G.

The list of Category 4b AUs can be viewed in Appendix H.

Category 4c—Waters of the State Not Impaired by a Pollutant

Impaired water bodies are placed in Category 4c if the impairment is not caused by *a pollutant* but rather caused by *pollution*, such as flow alteration or habitat alteration. Water bodies placed in Category 4c do not require the development of a TMDL. (For additional information on the differences between pollutants and pollution, see “Pollutants” and “Pollution,” page 13).

The number of unique AUs currently listed in Category 4c is 408 out of 5,746 total AUs statewide. There are 7,155 miles of rivers and 85,729 acres of freshwater lakes that are impaired by pollution but not by a pollutant.

The list of Category 4c AUs can be viewed in Appendix I.

Category 5: Waters of the State for Which a TMDL Is Needed

Impaired water bodies that do not meet applicable water quality standards for one or more beneficial uses by one or more pollutants are placed in Category 5. Category 5 is a streamlined §303(d) list that excludes waters that have an EPA-approved TMDL (Category 4a) and waters impaired by pollution (Category 4c), such as flow alteration or habitat modification. Criteria for listing a water body in Category 5 include the following:

- The water body was listed as impaired in the 2008 Integrated Report, **or**
- Tier I data indicate an impairment by a pollutant, **and**
- Application of pollution controls to sources of pollution affecting the impaired water body would restore the water body to full support status.

The number of unique AUs currently in Category 5 is 912 out of 5,746 total AUs statewide. There are 17,076 miles of rivers and 208,036 acres of freshwater lakes that are impaired and needing a TMDL.

The list of Category 5 AUs can be viewed in Appendix J.

Assessment Units Appearing in More Than One Category of the Integrated Report

In some cases, a water body segment/cause combination may show up in both Category 4 and 5 of the Integrated Report. Most occurrences of such multiple listings are for water bodies that are impaired for multiple pollutants or pollution (e.g., flow or habitat alteration). Examples include the following scenarios:

- A TMDL is approved for only a subset of the causes impairing a water body. For example, a water body is listed for sediment and temperature and only has an EPA-approved TMDL for sediment. That water body would be listed in Category 4a for sediment (EPA-approved TMDL) and Category 5 (needs TMDL) for temperature.
- A water body was put on the §303(d) list for a pollutant (e.g., temperature) and pollution (e.g., flow alteration). The water body would then be listed in Category 5 for temperature and Category 4c for flow alteration. For additional information on the policies regarding pollutants and pollution, see page 13.

Note: Because an AU can appear in multiple categories (as part of multiple AU-cause combinations), the number of AUs and mileage/acreage calculations for each of the five categories mentioned above cannot simply be combined to determine the “Total in State” summation. Some AUs and corresponding mileage/acreage totals would be counted more than once, causing erroneous results.

Relevant State Policies

DEQ relies on several key technical and policy statements in making water quality determinations, and these come together in the WBAG II (Grafe et al. 2002) (Figure 4). This document, which focuses on biology as a measure of aquatic life and water quality status, is the foundation of DEQ’s ambient monitoring and assessment program.

The following technical documents support the WBAG II:

- *Idaho River Ecological Assessment Framework* (DEQ 2002a)
- *Idaho Small Stream Ecological Assessment Framework* (DEQ 2002b)

Both of these documents are available from the DEQ website:

<http://www.deq.idaho.gov/surface-water-monitoring-assessment>

Appendix B. Data Quality Criteria Table (Tier I, II, and III)

Tier	Scientific Rigor	Relevance	Example	How Used
I	<ul style="list-style-type: none"> Quantitative. Parameters measured. Established monitoring plan with QA 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. 	<ul style="list-style-type: none"> Data relates to either water quality standard(s), especially numeric, or a beneficial use. ≤5 years old. Data relates to a named water body (GIS, latitude and longitude or map location provided). 	<ul style="list-style-type: none"> Ph.D. or masters thesis. Published or printed studies or reports. Published predictive models. EPA EMAP. BURP data. Use attainability analyses. Rapid Bioassessment Protocols (RBP). 	<ul style="list-style-type: none"> 303(d) listing or de-listing. 305(b) reports subbasin assessments. TMDLs. Planning for future monitoring.
II	<ul style="list-style-type: none"> Qualitative or semi-quantitative in nature. May have a monitoring plan. No QA/QC provided for within 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. 	<ul style="list-style-type: none"> Data may relate to a watershed. Not water body specific. Data >5 years old. Data may relate to other agency guidelines or objectives. 	<ul style="list-style-type: none"> Environmental assessments. Proper Functioning Condition. Cumulative Watershed Effects. Most citizen monitoring. Models with documentation. Agency planning documents. 	<ul style="list-style-type: none"> 305(b) reports. Subbasin assessments or TMDLs when data adds to overall assessment quality. Planning for future monitoring.
III	<ul style="list-style-type: none"> May be qualitative in nature. Parameters evaluated. Field staff have little to no training. No documented monitoring plan. No QA/QC. Anecdotal in nature. 	<ul style="list-style-type: none"> Not specific to water quality standards or beneficial uses. Location not specific. Data ≥10 years old. 	<ul style="list-style-type: none"> Non-specific reports or studies. Newspaper articles. Simple models without any documentation. 	<ul style="list-style-type: none"> Planning for future monitoring. Hold for further investigations.