Beneficial Use Reconnaissance Program

2011 Annual Work Plan

Idaho Department of Environmental Quality

This page left blank for printing purposes.

Table of Contents

Abstract **v**

Introduction **1**
Regulatory Framework (Clean Water Act) 1
History of the Beneficial Use Reconnaissance Program 2
Overview of Rapid Bioassessment 2
Purposes of the BURP Annual Work Plans 3
Beneficial Uses of Water in Idaho 3
BURP Support Status 3

Annual Work Plan, 2011 Field Season **4**
Objectives 4
Special Considerations for the 2011 Field Season 7

Stream Sample Sites **8**
Targeted Regional Monitoring Locations 8
2011 Idaho Stream Survey 9

National Wetland Condition Assessment **12**

Idaho Lake Reference Condition **14**

Pilot Projects **16**

Quality Assurance/Quality Control **16**

Safety Considerations **16**

Literature Cited **18**

List of Acronyms and Abbreviations **21**

Appendix A. Idaho Stream Survey Design Documentation **22**

Appendix B. Idaho Stream Survey Site List **27**

Appendix C. National Wetland Condition Assessment (NWCA) Site List **33**

Appendix D. List of Candidate Reference Lakes **35**

List of Figures

Figure 1. Scale differences among HUCs, WBIDs, and AUs. Circled numbers in the inset represent stream order. 6
Figure 2. Map of Idaho showing location of base and oversample probabilistic stream sample sites for the 2011 field season. 12
Figure 3. Map of the NWCA base, revisit, and oversample sites location throughout Idaho. 13
Figure 4. Sites of candidate reference lakes throughout Idaho. DEQ will monitor at 25 of the 37 lakes presented. 15

List of Tables

Table 1. The beneficial use categories of Idaho water as specified in the Idaho Water Quality Standards (IDAPA 58.01.02). 2
Table 2. Stream name and Assessment Unit where each regional office will conduct targeted monitoring for the 2011 field season. 1
Table 3. Number of probabilistic Idaho Stream Survey sites to be completed within each DEQ region. 1

Abstract

In 1993, the Idaho Division (now Department) of Environmental Quality (DEQ) embarked on a pilot monitoring program, the Beneficial Use Reconnaissance Project, (now Beneficial Use Reconnaissance Program [BURP]) aimed at integrating biological monitoring with physical habitat assessment to characterize stream integrity and the quality of Idaho's waters. This program has been implemented statewide since 1994. DEQ's past monitoring and assessment practices and the U.S. Environmental Protection Agency's rapid bioassessment protocols (RBPs) provided the foundation for BURP field protocols.

The purpose of BURP is to assist in determining the existing uses and beneficial use support status of Idaho's water bodies. The purposes of annual BURP work plans are to provide background information about the program and to list program objectives for a specific year. In addition, the workplan details any other ambient monitoring that will occur during the field season.

A companion to this work plan, the *Beneficial Use Reconnaissance Program Field Manual for Streams* (Beneficial Use Reconnaissance Program Technical Advisory Committee 2008), describes the methods used in BURP. For the 2011 field season, centralized crew training will be conducted out of the DEQ Boise Regional Office. Safety will be emphasized during the training.

The objectives for BURP in 2011 are:

- fill in data gaps with an emphasis on unassessed assessment units;
- continue probabilistic surveys of Idaho streams;
- participate in the U.S. Environmental Protection Agency's National Wetland Condition Assessment (NWCA); and
- monitor minimally-impacted (reference) lakes throughout Idaho.

There will be a single BURP crew operating out of each of the six DEQ Regional Offices for the 2011 season. The State Office will field a crew for work on the National Wetland Condition Assessment and a crew for reference lake monitoring.

The field season for all projects will begin July 1 and end September 30, 2011.

This page left blank for printing purposes.

Introduction

Regulatory Framework (Clean Water Act)

Clean water programs in the United States began with the Water Pollution Control Act of 1948 (Public Law 80-845) (Water Environment Federation 1987). This was the first comprehensive statement of federal interest in clean water programs. In 1972, the U.S. Congress passed Public Law 92-500, the Federal Water Pollution Control Act, more commonly known as the Clean Water Act (CWA) (Water Environment Federation 1987). The goal of the act was to restore and maintain the chemical, physical, and biological integrity of the nation's waters (Water Environment Federation 1987). An amendment passed in 1977 included the goal of protection and management of waters to ensure swimmable and fishable conditions. This goal, along with the 1973 goal to restore and maintain chemical, physical, and biological integrity, relates water quality to more than just chemical characteristics. The CWA and the programs it has generated have changed over the years as experience and perceptions of water quality have changed. The CWA has been amended 15 times, most significantly in 1977, 1981, and 1987.

The federal government, through the U.S. Environmental Protection Agency (EPA), assumed the dominant role in defining and directing water pollution control programs across the nation. The Idaho Department of Environmental Quality (DEQ) implements the CWA in Idaho while EPA provides oversight of Idaho's fulfillment of CWA requirements and responsibilities. DEQ is charged with providing consistent water body monitoring and assessment methods (Clean Water Act). Standardized procedures and DEQ monitoring protocols provide this consistency (Grafe et al. 2002). The assessment methods used in Idaho (Grafe et al. 2002) determine whether a water body is supporting or not supporting beneficial uses such as aquatic life (Table 1). The Idaho Water Quality Standards are the rules concerning beneficial uses and their associated criteria (IDAPA 58.01.02). These standards consist of three parts: 1) beneficial uses, 2) numeric and narrative criteria, and 3) anti-degradation. Beneficial uses are described in more detail below.

Table 1. The beneficial use categories of Idaho water as specified in the Idaho Water Quality Standards (IDAPA 58.01.02).

Beneficial Use Category	Beneficial Uses
Aquatic Life Support	**Cold Water Aquatic Life, Salmonid Spawning, Seasonal Cold Water Aquatic Life, Warm Water Aquatic Life, Modified**
Contact Recreation	**Primary (swimming), Secondary (boating)**
Water Supply	**Domestic, Agricultural, Industrial**
Other	**Wildlife Habitat, Aesthetics, Special Resource Waters**

History of the Beneficial Use Reconnaissance Program

In 1993, DEQ embarked on a pilot project known as the Beneficial Use Reconnaissance Project (now known as the Beneficial Use Reconnaissance Program [BURP]) aimed at integrating biological monitoring with physical habitat assessment to characterize stream integrity and water quality (McIntyre 1993). This project was also developed to meet the CWA requirements of monitoring and assessing biology and of developing biocriteria. This pilot project relied heavily on monitoring physical habitat and macroinvertebrates, following protocols developed by Idaho State University and DEQ in the early 1990s. The project closely followed the *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthos Macroinvertebrates and Fish* developed by EPA (Plafkin et al. 1989).

This BURP pilot project was an attempt to use the best science and understanding available to characterize water quality on the basis of biological communities and their attributes. Because of the success of the 1993 pilot project, DEQ decided to expand the project to statewide use in 1994 (McIntyre 1994; Steed and Clark 1995). BURP has remained in use statewide since 1994 (Idaho Division of Environmental Quality 1995, Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1998, 1999).

BURP monitoring was greatly reduced for the 2000 field season in order to revise the monitoring and assessment documents and to begin assessment of collected data. A final assessment document was created for the purpose of assessing these data (Grafe et al. 2002). Also in 2000, the Beneficial Use Reconnaissance Project was renamed the Beneficial Use Reconnaissance Program to emphasize its importance as a permanent DEQ monitoring program. Through the end of the 2008 BURP season, over 8,300 stream sites have been sampled in Idaho, making DEQ a national leader in bioassessment.

Overview of Rapid Bioassessment

Barbour et al. (1999) define biological assessment as “an evaluation of the condition of a waterbody using biological surveys and other direct measurements of the resident biota in surface waters.” The concept of “rapid bioassessment” resulted from a report by EPA, which suggested a restructuring of monitoring programs at that time (U.S. Environmental Protection Agency 1987). EPA’s answer to this suggestion resulted in the first rapid bioassessment protocols (RBPs) being published (Plafkin et al. 1989). RBPs were found to be faster to carry out, and thus cheaper, than previous monitoring techniques.

The RBPs have been used nationwide by a wide variety of federal agencies, several states, and other monitoring entities, and have improved over the years (Barbour et al. 1999). Idaho’s BURP uses many of the RBP methods and makes modifications to improve consistency and reduce variability, to better fit Idaho’s landscape, and to meet DEQ’s objective (Beneficial Use Reconnaissance Project Technical Advisory Committee 1999). A more detailed review of RBPs can be found in Idaho’s 1998 303(d)-list report (Idaho Division of Environmental Quality 1998).

Purposes of the BURP Annual Work Plans

The purposes of the BURP annual work plans are to provide background information

about BURP and list yearly objectives. Annual work plans also help improve consistency within the program and serve as part of the BURP quality assurance/ quality control (QA/QC) program. The annual work plan specifies the monitoring objectives for the year and the priorities for watersheds and streams to be sampled. Any pilot projects planned for the year are described, as well as any other special considerations that may be unique to a given year. Clark (2001) provided the first work plan for BURP that did not contain the actual field methods used; now the methods can be found in the companion to the work plan. For the 2011 work plan, methods can be found in the *Beneficial Use Reconnaissance Program Field Manual for Streams* (Beneficial Use Reconnaissance Program Technical Advisory Committee, 2007), which describes in detail the field methods used.

Beneficial Uses of Water in Idaho

The beneficial uses of water in Idaho are defined in the Water Quality Standards at IDAPA 58.01.02.010 as follows:

> 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 aesthetics. The beneficial use is dependent upon actual use, the ability of the water to support a non-existing use either now or in the future, and its likelihood of being used in a given manner. The use of water for the purpose of wastewater dilution or as a receiving water for a waste treatment facility effluent is not a beneficial use.

These beneficial uses are listed in Table 1. Since 1993, the purpose of BURP has been to establish existing uses and help determine the status of these beneficial uses (McIntyre 1993; Idaho Division of Environmental Quality 1995; Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1999).

BURP Support Status

For BURP, DEQ staff collect and measure key water quality indicators that aid DEQ in determining the beneficial use support status of Idaho's water bodies. This determination will tell whether a water body is in compliance with water quality standards and criteria and whether the water body is meeting reference conditions. Reference conditions are biological conditions that fully support applicable beneficial uses with little effect from human activity and represent the highest level of support attainable. Reference conditions vary by bioregion. BURP monitoring provides data for use in assessing beneficial uses pursuant to our *Water Body Assessment Guidance* (Grafe et al. 2002).

Currently, DEQ recognizes three categories of beneficial use support status that a water body may attain: fully supporting, not fully supporting, and not assessed. "Fully supporting" means that the water body is in compliance with water quality standards and criteria and meets the reference conditions for all designated and existing beneficial uses as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002). "Not fully supporting" refers to a water body that is not in compliance with water quality standards or criteria, or does not meet reference conditions for each beneficial use as

determined through the *Water Body Assessment Guidance* (Grafe et al. 2002). The "not assessed" status describes water bodies that have been monitored to some extent but are missing critical information needed to complete an assessment. "Not assessed" can also mean that DEQ has not visited the water body and has no information on it.

Annual Work Plan, 2011 Field Season

Objectives

The monitoring objectives for the 2011 field season are to

- fill in data gaps with an emphasis on unassessed assessment units;
- continue probabilistic surveys of Idaho streams;
- participate in the U.S. Environmental Protection Agency's National Wetland Condition Assessment (NWCA); and
- monitor minimally-impacted (reference) lakes throughout Idaho.

Due to recent budget cuts, DEQ will be limited to a total of 240 wadeable stream sites for the 2011 field season. Due to this limitation, DEQ will not monitor long-term reference trend sites. Several authors (Bahls et al. 1992; Grafe et al. 2002; Harrelson et al. 1994; King 1993; McGuire 1992, 1995) have pointed out the need for long-term monitoring data of least-impacted (reference) sites. The purpose of long-term monitoring efforts is to help determine the range of natural variation within a water body (Barbour et al. 1999). For several years, BURP monitoring has placed an emphasis on least-impacted (reference) conditions (McIntyre 1994; Idaho Division of Environmental Quality 1995; Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1998, 1999). However, due to budget and time constraints in 2011, long-term reference trend sites will not be monitored.

DEQ's current monitoring strategy ties into the EPA development of a Consolidated Assessment and Listing Methodology (CALM), which has the purpose of improving state monitoring and assessment programs (U.S. Environmental Protection Agency 2001). Six major parts make up CALM: 1) making decisions on attainment/non-attainment of state water quality standards (covering listing/de-listing decisions); 2) designing comprehensive state monitoring networks that support attainment decisions; 3) reporting and presenting data; 4) upgrading elements of state monitoring programs; 5) identifying causes and sources of impairment; and 6) addressing issues such as pathogens, nutrients, sedimentation, and fish advisories. EPA's overall goal of CALM is to both strengthen and streamline the water quality monitoring, assessment, and listing process for purposes of sections 303(d) and 305(b) of the Clean Water Act (now known as the integrated report). CALM will provide guidance on the monitoring data and assessment methods needed to support decision making and on communicating water quality conditions to the public. The benefits of CALM are, therefore, increased monitoring on all waters, improved decision making on water quality standards attainment and listing of impaired waters, and clearer communication to the public on water quality issues in each state and across the nation (U.S. Environmental Protection Agency 2001).

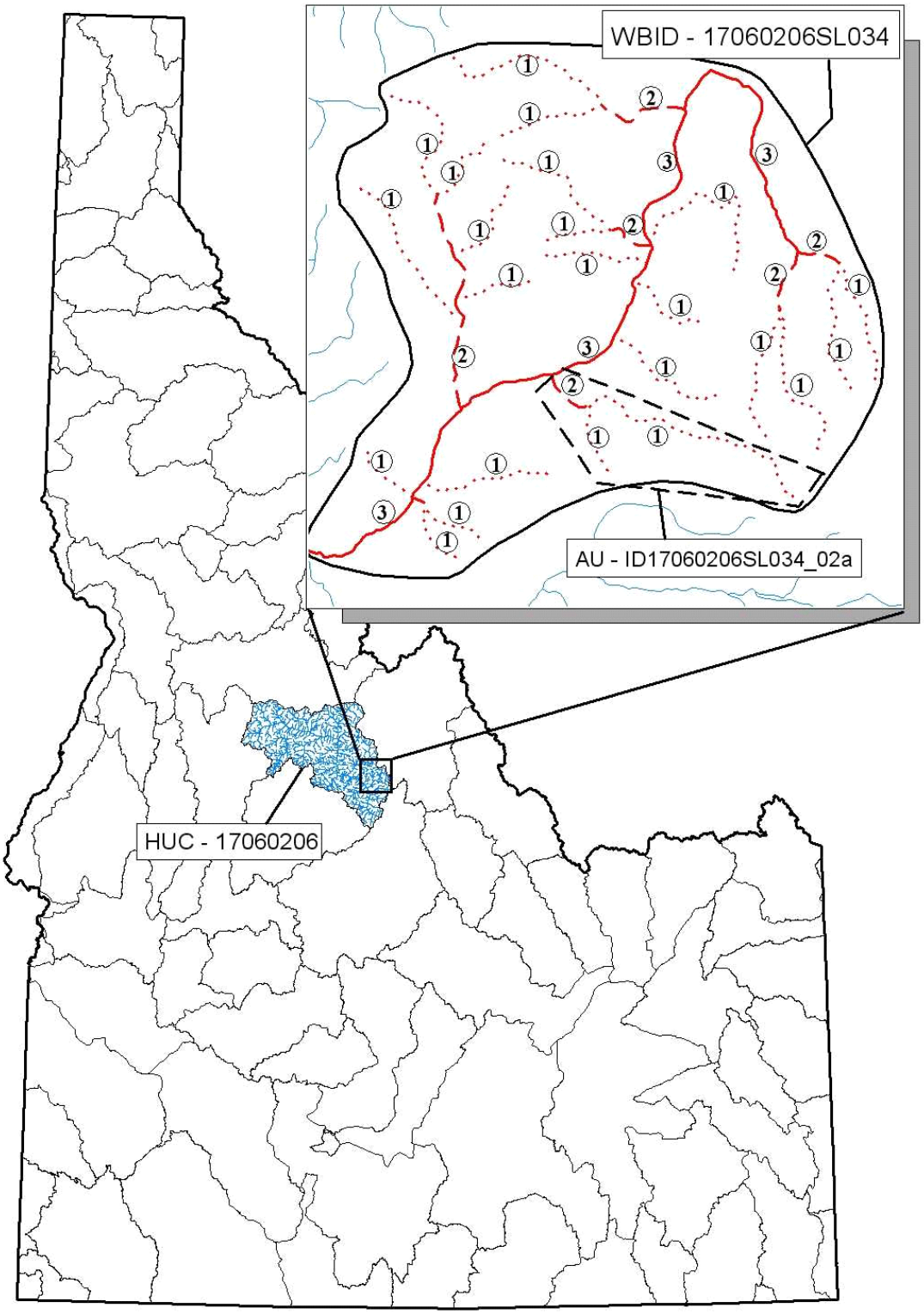

Figure 1. Scale differences among HUCs, WBIDs, and AUs. Circled numbers in the inset represent stream order.

The census approach taken by DEQ from 1993 to 2003 proved to be too cost prohibitive to answer the questions posed to states by the EPA, specifically, "what is the status of the state's waters?" In 2005, DEQ began moving from census surveys toward probability-based surveys in order to answer this question. Implementing a probability-based random survey allows DEQ to determine the status of the state's waters by using properly designed surveys to develop a reliable estimate of the status of the state's waters. For the 2011 field season, DEQ will monitor 50 probabilistic sites in order to provide an estimate of the status of wadeable streams.

EPA's CALM strategy serves as a tool to help EPA and the states determine whether a monitoring program meets the prerequisites of CWA Section 106(e)(1).0. EPA recommend that state programs include the following 10 elements: 1) program strategy, 2) objectives, 3) sampling design, 4) core and supplemental water quality indicators, 5) quality assurance, 6) data management, 7) data analysis and assessment, 8) reporting, 9) evaluation of the program, and 10) general support with infrastructure planning. EPA believes that states' monitoring programs can be upgraded to include all of these elements within the next 10 years. Section 1067(e)(1) of the CWA and 40 CFR Part 35.168(a) require that EPA award Section 106 funds to a state only if the state has provided for, or is carrying out as part of its program, the establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor and to compile and analyze data on the quality of navigable waters in the states, and provision for annually updating the data and including it in the Section 305(b) report.

Because these elements have not been clearly defined in the past, there is significant variability among states. EPA expects that state water monitoring programs will evolve over the next several years so that ultimately all states will have a common foundation of water quality monitoring programs that supports state decision needs. EPA expects that most states will employ an iterative process to fully implement a monitoring program that reflects the elements described in this document, and will work with states to identify annual monitoring milestones. States should develop, over time, a monitoring program addressing the 10 elements listed above.

Special Considerations for the 2011 Field Season

The Natural Resources Conservation Service (2011) provided the following streamflow projections for Idaho for 2011 (as of March 1, 2011):

> Another month of variable precipitation did not impact Idaho's water supply outlook too much. February precipitation amounts ranged from 45% of average in the Boise and Big Wood basins to near average in the Bear, Spokane and Clearwater basins. The Bear River basin hosts the highest snowpack in the state at 124% of average, twice last year and highest since 1997. The lowest snowpacks are 79-89% of average across the middle of Idaho from the Weiser basin to the Big Lost basin. Reservoir storage is in good shape, with many reservoirs reporting average or better amounts for the end of February. The lowest reservoir storage levels reside across Idaho's southern border and include the Owyhee, Salmon

Falls, Oakley reservoirs and Bear Lake. These storage facilities are 60-85% of average, 30-55% full. Streamflow forecasts range from 155% of average runoff in the Bear River to 75% in the Little Wood and Big Lost basins. The most important forecast for many of Idaho's water users on the Snake River Plain is the Snake River near Heise. This point, located just east of Idaho Falls, is forecast for 110% of average streamflow from April through July. Overall, water supplies should be adequate for most users, but could be tight in the Big Lost, Little Lost and Oakley basins. A few more storms tracking across these basins or good spring precipitation would help put the icing on the cake and ensure an adequate water supply for the state.

Stream Sample Sites

DEQ will be sampling approximately 240 wadeable stream sites statewide, with 50 sites selected using a probabilistic survey design. The following sections detail the locations for stream sampling for the 2011 field season.

Targeted Regional Monitoring Locations

Regional priorities determine location of targeted monitoring sites throughout the respective DEQ region, with the exception of the 50 probabilistic sites included in the 2011 Idaho Stream Survey. Regional priorities for targeted monitoring are listed in Table 2 by stream name and Hydrologic Unit Code (HUC). These sites are tentative, and may need to be changed during the field season as changing priorities or field conditions dictate.

Table 2. Stream name and Assessment Unit where each regional office will conduct targeted monitoring for the 2011 field season.

Boise Regional Office		Coeur d'Alene Regional Office		Idaho Falls Regional Office	
Stream Name	**Assessment Unit**	**Stream**	**Assessment Unit**	**Stream Name**	**Assessment Unit**
Current Creek	ID17050104SW026_02a	Big Creek	ID17010215PN002_02	Barnes Creek	ID17040104SK019_02
South Mountain Creek	ID17050108SW005_02	Upper Priest River	ID17010215PN018_04	Webber Creek	ID17040215SK017_02
UT Indian Creek	ID17050108SW006_02	Kalispell Creek	ID17010215PN024_02	Uncle Ike Creek	ID17040217SK005_03
Rock Creek	ID17050108SW010_05	Lower West Branch Priest River	ID17010215PN030_02	Little Lost River	ID17040217SK007_03
Rose Creek	ID17050108SW011_02	Moores Creek	ID17010215PN031_02	Sawmill Creek	ID17040217SK012_03
Devils Creek	ID17050112SW005_02	Moores Creek	ID17010215PN031_03	Timber Creek	ID17040217SK018_03
Sheep Creek	ID17050112SW005_03	East River	ID17010215PN003_04	Summit Creek	ID17040217SK019_03
Grimes Creek	ID17050112SW013_02	Reeder Creek	ID17010215PN023_02	Wet Creek	ID17040217SK022_03
Grimes Creek	ID17050112SW013_03	Reeder Creek	ID17010215PN023_03	Cabin Fork Creek	ID17040218SK027_03
Willow Creek	ID17050113SW002b_04	Kalispell Creek	ID17010215PN024_03	Willow Creek	ID17040218SK020_03
EF Fall Creek	ID17050113SW031_02	Lower West Branch Priest River	ID17010215PN030_03	Parsons Creek	ID17040218SK023_05
Indian Creek	ID17050114SW002_04	Lower West Branch Priest River	ID17010215PN030_04	Grant Creek	ID17040218SK024_03
Lick Creek	ID17050120SW001_02a	Derr Creek	ID17010213PN001_02	Navarre Creek	ID17040218SK044_03
Archie Creek	ID17050120SW001_02a	Parker Cr.	ID17010104PN009_02	Alder Creek	ID17040218SK045_03
MacDonald Creek	ID17050120SW001_02a	Bane Cr.	ID17010104PN036_02	Iron Bog Creek	ID17040218SK054_03
Deadwood River	ID17050120SW014_04	Bane Cr.	ID17010104PN036_03	Morgan Creek	ID17060201SL002_03
Shafer Creek	ID17050122SW004_02	Brown Cr.	ID17010104PN027_02	Bayhorse Creek	ID17060201SL017_03
Deer Creek	ID17050122SW009_02	Dobson Cr.	ID17010104PN029_02a	Yankee Fork	ID17060201SL034_03
Gold Fork	ID17050123SW008_05	Sand Cr.	ID17010104PN031_02	Smiley Creek	ID17060201SL083_03
Hornet Creek	ID17050124SW021_02	Sand Cr.	ID17010104PN031_02	Champion Creek	ID17060201SL086_03
Hornet Creek	ID17050124SW021_03	Curley Cr.	ID17010104PN035_02	Fourth of July Creek	ID17060201SL087_02
Hornet Creek	ID17050124SW021_04	Curley Cr.	ID17010104PN035_03	Fisher Creek	ID17060201SL088_02
Monroe Creek	ID17050124SW033_02	Bayview Cr	ID17010214PN018_02	Slate Creek	ID17060201SL099_03
Henley Creek	ID17050201SW010_03	Maiden Cr.	ID17010214PN018_02	Holman Creek	ID17060201SL100_02
WF Springfield Creek	ID17060205SL007_02	Pearl Cr.	ID17010214PN018_02	Herd Creek	ID17060201SL118_04
UT Pistol Creek	ID17060205SL007_02	Gold Gulch	ID17010214PN018_02	East Fork Pahsimeroi River	ID17060202SL022_02
Blackmare Creek	ID17060208SL014_02	Fernan Cr	ID17010303PN032_02	South Fork Big Creek	ID17060202SL032_02
NF Camp Creek	ID17060208SL022_02	Bennett Cr	ID17010303PN001_02b	Panther Creek	ID17060203SL017_03
UT Caton Creek	ID17060208SL024_02	Blue Cr	ID17010303PN001_02c	Basin Creek	ID17060204SL010_04
Caton Creek	ID17060208SL024_03	Squaw Cr	ID17010303PN001_02d	Basin Creek	ID17060204SL011_04
Willey Creek	ID17060208SL033_02	Powderhorn Cr	ID17010303PN001_02e	Hayden Creek	ID17060204SL015_04
Sheep Creek	ID17060208SL033_03	Stinson Cr	ID17010303PN001_02f	Payne Creek	ID17060204SL016_02
Lime Creek	ID17050113SW010_05	Clark Cr	ID17010303PN010_02	Bear Valley Creek	ID17060204SL016_04
Warm Springs Creek	ID17050120SW016_02	Couger Gulch	ID17010301PN029_02	Zeph Creek	ID17060204SL024_03
		Tepee Creek	ID17010301PN017_02	Meadow Lake Creek	ID17060204SL039_02
		Hudlow Creek	ID17010301PN030_02b	Flume Creek	ID17060204SL058_03
		Flat Creek	ID17010301PN023_02	Agency Creek	ID17060204SL058_04
		Graham Creek	ID17010301PN002_02	Silver Creek	ID17060206SL034_03
		South Fork Coeur d'Alene River	ID17010302PN011_02	Hoodoo Creek	ID17060206SL044_02
		Pine Creek	ID17010302PN002_02	Horse Creek	ID17060207SL041_04
		Big Creek	ID17010302PN007b_03		
		Bear Creek	ID17010302PN020_03		

Table 2. (cont'd)

Lewiston Regional Office		Pocatello Regional Office		Twin Falls Regional Office	
Stream Name	**Assessment Unit**	**Stream Name**	**Assessment Unit**	**Stream Name**	**Assessment Unit**
Cottonwood Creek	ID17060103SL005_03	St. Charles Creek	ID16010201BR016_03	Fifth Fork Rock Creek	17040212SK017_02
Cave Gulch	ID17060103SL006_02	Georgetown Creek	ID16010201BR022_03a	Fourth Fork Rock Creek	17040212SK018_02
Corral	ID17060103SL007_02	Williams Creek	ID16010202BR010_02	Dry Cottonwood Creek	17040212SK014_02
Middle	ID17060103SL008_02	Williams Creek	ID16010202BR010_02a	Donahue Creek	17040212SK015_02
Dough	ID17060103SL009_02	Left Fork Maple Creek AND Maple Cr	ID16010202BR003_02a	Bell Mare Creek	17040212SK0034_02
Billy	ID17060103SL010_02	Mink Creek	ID16010202BR007_02b	Unnamed	17040212SK0037_02
Captain John	ID17060103SL011_03	Shingle Creek and unnamed waterbody	ID16010202BR014_02c	Squaw Creek	17040212SK0036_02
Redbird	ID17060103SL012_02	Devil Creek AND Unnamed Waterbodi	ID16010204BR004_02	House Creek	17040213SK005_03
Big Elk Creek	ID17060305CL058_03	First Creek	ID16010204BR006_02a	Little House Creek	17040213SK005_02
Elk Creek	ID17060305CL056_03	Second Creek	ID16010204BR006_02b	Barbour Creek	17040213SK010_02
Old Man Creek	ID17060303CL007_03	Wright Creek	ID16010204BR010_02b	North Fork Salmon Falls Creek	17040213SK010_03
Sponge	ID17060303CL014_03	Wright Creek	ID16010204BR010_03	Bear Creek	17040213SK010_02
Brushy Fork	ID17060303CL035_04	Wright Creek	ID16010204BR010_04	Salmon Falls Creek (below Cedar Creek	17040213SK003_06
Crooked Fork	ID17060303CL038_04	Stump Creek	ID17040105SK006_03	Browns Creek	17040213SK008_02
EF Deadman	ID17060303CL060_03	Slug Creek AND Unnamed	ID17040207SK012_03	Jack Creek	17040213SK015_02
Big Bear Creek	ID17060306CL057_03	Cabin Creek	ID17040207SK016_02e	Big Witch Creek	17040219SK011_02
Falls	ID17060306CL040_02	Timothy Creek	ID17040207SK017_02a	Lake Creek	17040219SK015_03
Deer	ID17060306CL040_02	Daves Creek AND Unnamed	ID17040207SK018_02b	Eagle Creek	17040219SK016_03
Cedar	ID17060306CL046_03	Bacon Creek,	ID17040207SK019_02a	Dry Creek	17040219SK030_03
Orofino	ID17060306CL039_04	Sheep Creek	ID17040207SK022_03	Beaver Creek	17040220SK004_02
Johnny Creek	ID17060307CL009_03	Rawlins Creek	ID17040207SK027_03	Little Beaver Creek	17040220SK004_02
Fourth of July	ID17060307CL017_04	Wolverine Creek	ID17040207SK030_02	Willow Creek	17040220SK003_04
Barnard	ID17060307CL018_03	Wolverine Creek	ID17040207SK030_03	Willow Creek	17040220SK005_03
Lower Twin	ID17060307CL001_02	East Fork Mink Creek	ID17040208SK004_02d	Willow Creek	17040220SK005_02
French	ID17060307CL007_02	East Fork Mink Creek	ID17040208SK004_03	Camp Creek	17040220SK002_03
Clayton	ID17060307CL018_02	Mink Creek	ID17040208SK004_04	Camas Creek	17040220SK001_05
Slide	ID17060307CL018_02	Mink Creek	ID17040208SK004_04a	Dairy Creek (above Mormon Reservoir)	17040220SK024_02
Silver Creek	ID17060308CL002_03	Walker Creek	ID17040208SK007_02	Little Deer Creek	17040220SK009_02
Bull run	ID17060308CL003_02	Cherry Creek	ID17040208SK014_02b	Big Deer Creek	17040220SK009_02
Squaw	ID17060308CL003_02	East Creek AND Unnamed	ID17040208SK017_02a	Spring Creek	17040220SK026_03
Stattuck	ID17060308CL032_02	Deer Creek	ID17040208SK017_02b	Hailey Creek	17040221SK021_03
Elk	ID17060308CL030_03	Dempsey Creek	ID17040208SK017_02d	Sheep Creek	17040221SK021_02
Gold	ID17060308CL026_03	Twenty-four Mile Creek	ID17040208SK018_02a		
		Twenty-four Mile Creek	ID17040208SK018_03a		
		North Fork Toponce Creek	ID17040208SK021_02b		
		Sawmill Creek	ID17040208SK023_02d		
		Moonlight Creek	ID17040208SK023_02e		
		West Fork Rapid Creek	ID17040208SK023_02g		
		North Fork Rapid Creek	ID17040208SK023_02i		

2011 Idaho Stream Survey

The 2011 Idaho Stream Survey probabilistic survey design calls for between seven and eight sites to be completed in each of the six DEQ regions (Table 3). A map of the location of sites throughout the state is presented in Figure 2. The 2011 Idaho Stream Survey design file information is attached as Appendix A. The complete site list, including both base and oversample sites, is attached as Appendix B.

Table 3. Number of probabilistic Idaho Stream Survey sites to be completed within each DEQ region.

DEQ Region	Number of Survey Sites
Boise (BRO)	**9**
Coeur d'Alene (CRO)	**8**
Idaho Falls (IFRO)	**9**
Lewiston (LRO)	**8**
Pocatello (PRO)	**8**
Twin Falls (TFRO)	**8**
Total Statewide	**50**

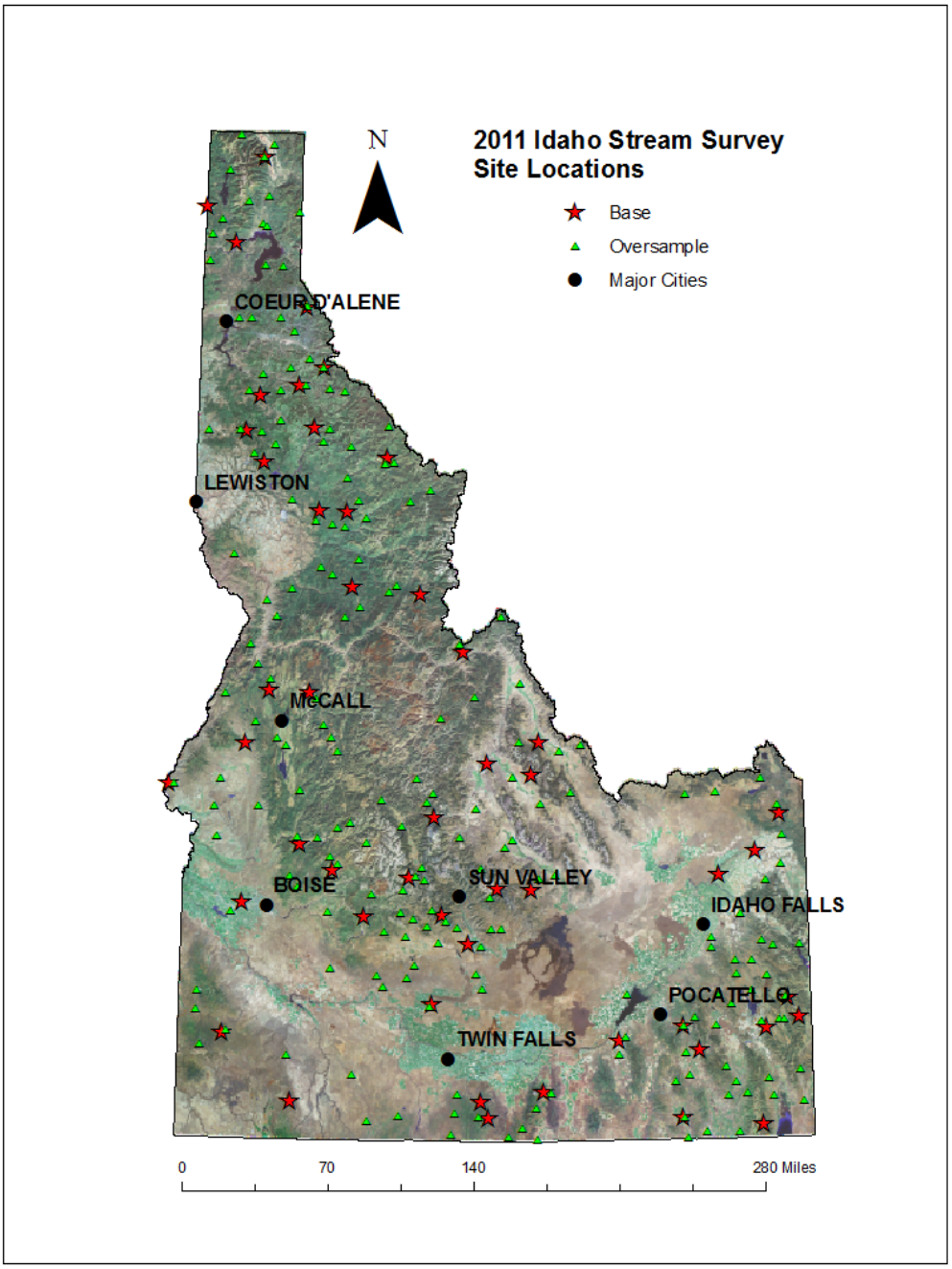

Figure 2. Map of Idaho showing location of base and oversample probabilistic stream sample sites for the 2011 field season.

National Wetland Condition Assessment

For the 2011 field season, DEQ will be monitoring at 13 wetland sites as part of the EPA's National Wetland Condition Assessment (NWCA). The NWCA is a component of the National Aquatic Resource Surveys conducted by EPA. The ultimate goal of the

NWCA is to produce a report that describes the ecological condition of the Nation's wetlands. DEQ's state office will work in partnership with the Idaho Department of Fish and Game to complete this monitoring effort. Figure 3 displays the location of the 2011 NWCA sites to be monitored. Monitoring will follow the protocols described in the *National Wetland Condition Assessment: Field Operations Manual* (U.S. Environmental Protection Agency, 2011). A map of the location of the NWCA sites throughout the states is presented in Figure 3. The complete NWCA site list is attached as Appendix C.

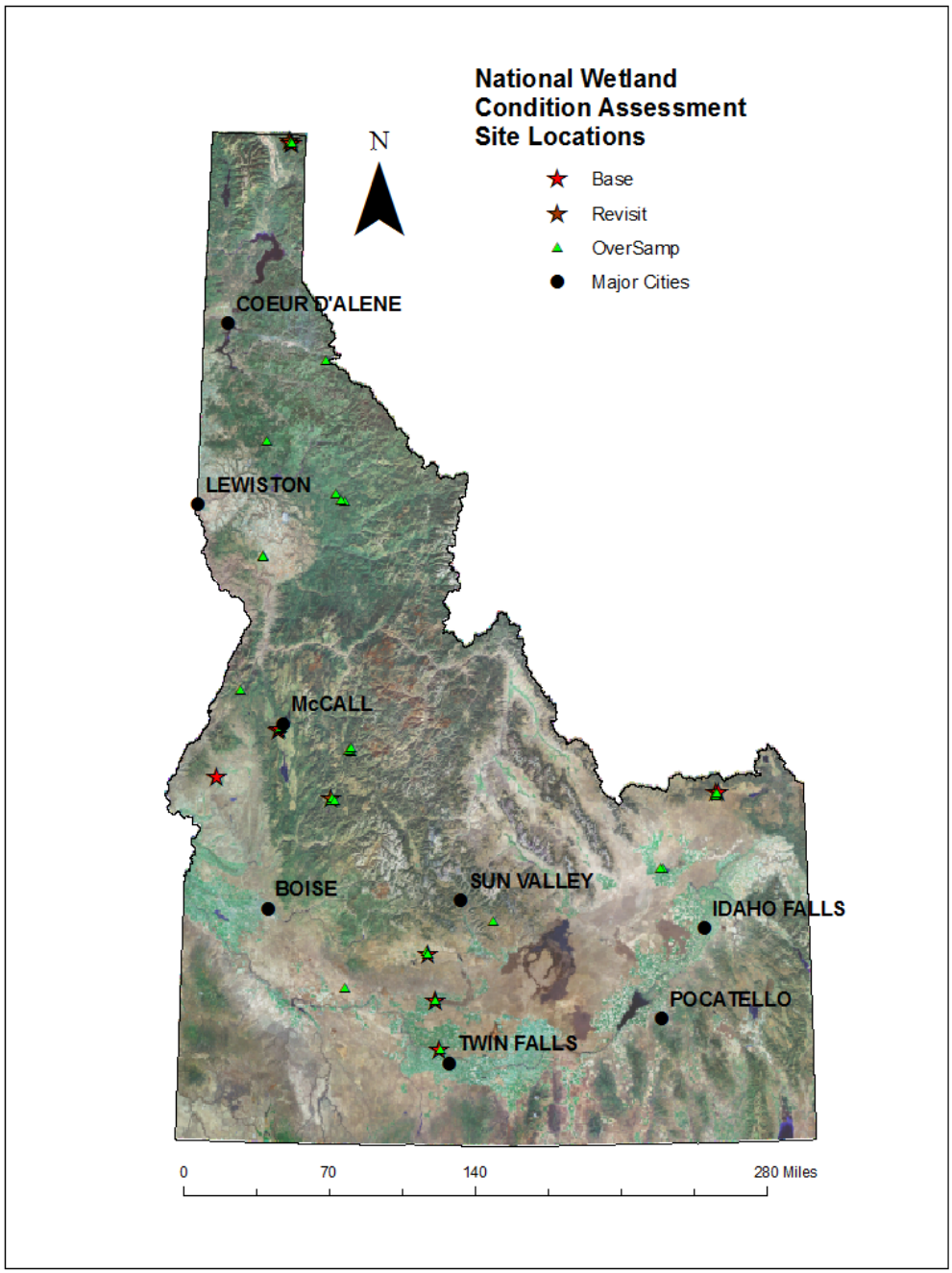

Figure 3. Map of the NWCA base, revisit, and oversample sites location throughout Idaho.

Idaho Lake Reference Condition

In response to recommendations in the *Idaho Lakes Assessment Report* (Kosterman, 2010), DEQ will be monitoring at approximately 25 lakes statewide in order to better understand ecological conditions of lakes with minimal human impact. These data will be used to compare results from the upcoming 2012 National Lakes Assessment and to further develop a statewide ambient lake monitoring program. Monitoring and lake site selection will follow the procedures described in the draft *Evaluation of Lake Reference Condition, Quality Assurance Project Plan (QAPP)* (Pappani, *in prep*). A map of the location of the candidates for reference lake monitoring is presented in Figure 4.

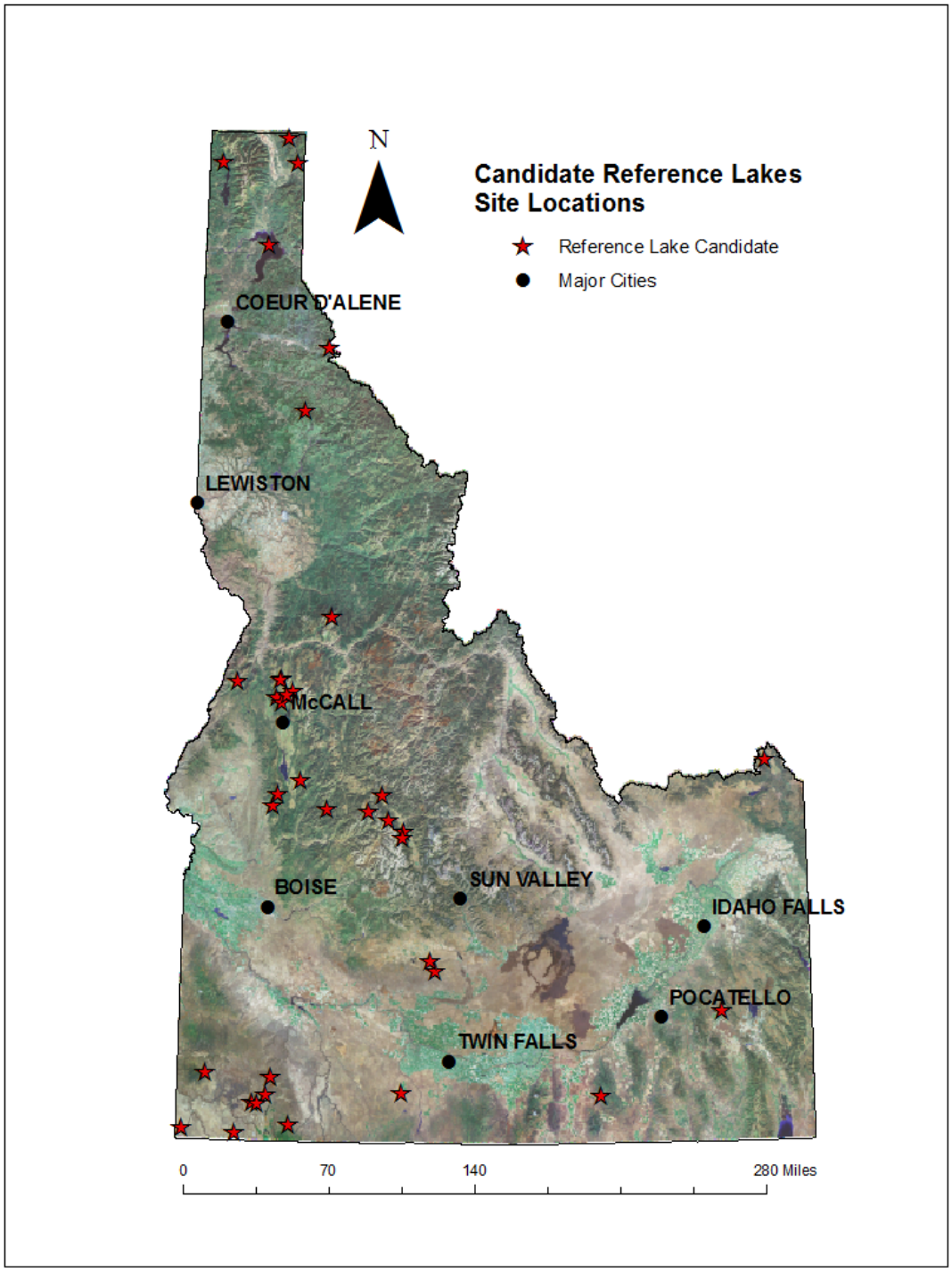

Figure 4. Sites of candidate reference lakes throughout Idaho. DEQ will monitor at 25 of the 37 lakes presented.

Pilot Projects

A pilot project is a way to try out new methods and other ideas on a trial basis and thus

save resources until it is shown that the method should be integrated into BURP.

DEQ piloted the use of electronic field forms for the 2010 field season. Data were collected on rugged field computers from 49 sites state wide. For the 2011 field season, we will be scaling up the use of electronic field forms for collection of data at all wadeable stream sites. DEQ's goal is to improve accuracy and efficiency of data integration and importation into the central database.

Quality Assurance/Quality Control

The quality assurance program for BURP is critical to its success and is directly related to the utility, reproducibility, and defensibility of the data obtained by DEQ's monitoring efforts. Quality control is part of every aspect of BURP, including the following:

- Preparing monitoring documents
- Educating and training BURP coordinators and crews
- Providing electrofishing training
- Providing crew training
- Preparing, calibrating, and maintaining field equipment
- Taking samples
- Conducting independent field audits, writing subsequent reports, and following up on issues raised in the audits
- Identifying organisms (macroinvertebrate, fish, algae, amphibian) and housing voucher specimens in a museum collection
- Entering, analyzing, and managing data
- Writing reports and performing all other aspects of using the data

Safety Considerations

DEQ considers crew safety the top priority for all BURP monitoring. Major safety aspects of the monitoring are discussed in the *BURP Field Manual for Streams* (Beneficial Use Reconnaissance Program Technical Advisory Committee 2008). Some of the safety precautions are listed below:

- DEQ requires that all staff and crew members dealing with BURP have current certifications in first aid and CPR or receive training in both.
- DEQ requires that vehicles be stocked with emergency items, including a first aid kit, fire extinguisher, and other safety items.
- Safety issues concerning working around water and using sampling equipment are discussed in the BURP Field Manual (Beneficial Use Reconnaissance Program Technical Advisory Committee 2008), the BURP Training Manual (Beneficial Use Reconnaissance Program Technical Advisory Committee 2006), and in training classes.
- Each BURP crew is responsible for their safety. DEQ will provide the tools and

training necessary for crews to conduct their field work in a safe manner.

- The crews will also take appropriate measures to decontaminate waders, equipment, and vehicles so as not to transfer/introduce weed seeds, aquatic diseases, or other aquatic organisms from one water body or watershed to another.

For more information about BURP or the 2011 Annual Work Plan, contact:

Jason Pappani
Monitoring and Assessment Coordinator
1410 N Hilton
Boise, Idaho 83706
(208) 373-0515
Email: Jason.Pappani@deq.idaho.gov

Literature Cited

Bahls, L., R. Bukantix, and S. Tralles. 1992. Benchmark biology of Montana reference streams. Montana Department of Health and Environmental Sciences, Helena. 368 pp.

Barbour, M. T., J. Gerritsen, B. D. Snyder, and J. B. Stribling. 1999. Rapid Bioassessment Protocols for use in streams and wadeable rivers: periphyton, benthic macroinvertebrates and fish, second edition. EPA 841-B-99-002. U.S. Environmental Protection Agency, Washington, DC. xi +306 pp.

Beneficial Use Reconnaissance Project Technical Advisory Committee. 1996. 1996 Beneficial Use Reconnaissance Project workplan. Idaho Division of Environmental Quality, Boise. 71 pp.

Beneficial Use Reconnaissance Project Technical Advisory committee. 1997. 1997 Beneficial Use Reconnaissance Project workplan. Idaho Division of Environmental Quality, Boise 149 pp.

Beneficial Use Reconnaissance Project Technical Advisory Committee 1998. Beneficial Use Reconnaissance Project - 1998 wadeable streams workplan. Idaho Division of Environmental Quality, Boise 56 pp.

Beneficial Use Reconnaissance Project Technical Advisory committee. 1999. 1999 Beneficial Use Reconnaissance Project workplan for wadeable streams. Idaho Division of Environmental Quality, Boise. 82 pp.

Beneficial Use Reconnaissance Program Technical Advisory committee. 2002. Beneficial Use Reconnaissance Project training manual for wadeable (small) streams. Idaho Department of Environmental Quality, Boise.

Beneficial Use Reconnaissance Program Technical Advisory Committee. 2003. Beneficial Use Reconnaissance Program 2003 Annual Work Plan for Streams. Idaho Department of Environmental Quality, Boise. 23 pp.

Beneficial Use Reconnaissance Program Technical Advisory Committee. 2006. Beneficial Use Reconnaissance Program Field Manual for Rivers. Idaho Department of Environmental Quality, Boise.

Beneficial Use Reconnaissance Program Technical Advisory Committee. 2007. Beneficial Use Reconnaissance Program Field Manual for Streams. Idaho Department of Environmental Quality, Boise.

Beneficial Use Reconnaissance Program Technical Advisory Committee. 2008. Beneficial Use Reconnaissance Program Field Manual for Rivers. Draft. Idaho Department of Environmental Quality, Boise.

Clark, W. H. 2001. Beneficial Use Reconnaissance Program 2001 annual work plan for wadeable (small) streams. Idaho Department of Environmental Quality, Boise. 16 pp.

Grafe, C. S., C. A. Mebane, M. J. McIntyre, D. A. Essig, D. H. Brandt, and D. T. Mosier. 2002. The Idaho Department of Environmental Quality water body assessment guidance, second edition. Idaho Department of Environmental Quality, Boise. 219 pp.

Harrelson, C. C., C. L. Rawlins, and J. P. Potyondy. 1994. Stream channel reference sites: an illustrated guide to field techniques. General Technical Report RM-245. U.S. Department of Agriculture, Forest Serve, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 61 pp.

Idaho Division of Environmental Quality. 1995. Idaho statewide work plan for the 1995 beneficial use attainability and status reconnaissance survey. Idaho Division of Environmental Quality, Boise. 45 pp.

Idaho Division of Environmental Quality. 1998. 1998 303(d) list. Idaho Division of Environmental Quality, Boise.

King, K.W. 1993. A bioassessment method for use in Wyoming stream and river water quality monitoring. Wyoming Department of Environmental Quality, Cheyenne. 84 pp.

Kosterman, M.A. 2010. Idaho Lakes Assessment Report. Idaho Departmet of Environmental Quality, Boise. 41 pp.

McGuire, D.L. 1992. Montana references streams project: 1991 aquatic macroinvertebrate surveys. Montana Department of Health and Environmental Sciences, Helena. 56 pp.

McGuire, D.L. 1995. Montana reference streams annual summary: 1994 aquatic macroinvertebrate data and RBP criteria evaluation. Montana department of Health and Environmental Sciences, Helena. 67 pp.

McIntyre, M. 1993. Beneficial Use Reconnaissance Project coordinated water quality monitoring plan. Idaho Division of Environmental Quality, Boise. 8 pp.

McIntyre, M. 1994. Idaho state wide work plan for completing beneficial use attainability and status surveys. Idaho Division of Environmental Quality, Boise. 47 pp.

Natural Resources Conservation Service. 2011. Idaho basin outlook report March 1, 2011. Natural Resources Conservation Service, Boise, ID.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross, and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: benthic macroinvertebrates and fish. EPA 440-4-89-001. U.S. Environmental Protection Agency, Washington, DC. 306 pp.

State of Idaho, Administrative Rules (IDAPA), 58.01.02. Water quality standards and wastewater treatment requirements. (*http://www2.state.id.us/adm/adminrules/rules/idapa58/0102.pdf*)

Steed, R.S. and W.H. Clark. 1995. Idaho Beneficial Use Reconnaissance Project. Abstracts, 32nd Annual Meeting Idaho Chapter American Fisheries Society, Boise ID. 1 p.

U.S. Environmental Protection Agency. 1987. Surface water monitoring: a framework for change. U.S. Environmental Protection Agency, Washington, DC. 41 pp. + appendices.

U.S. Environmental Protection Agency. 2001. Consolidated assessment and listing methodology toward a compendium of best practices. U.S. Environmental Protection Agency, Washington, DC. 150 pp.

U.S. Environmental Protection Agency. 2007. National Rivers and Streams Assessment: Field Operations Manual. EPA-841-B-07-009. U.S. Environmental Protection Agency, Washington, DC.

U.S. Environmental Protection Agency. 2011. National Wetland Condition Assessment: Field Operations Manual. EPA-843-R-10-001. U.S. Environmental Protection Agency, Washington, DC.

Water Environment Federation. 1987. The Clean Water Act of 1987. The Water Environment Federation, Alexandria, VA. 318 pp.

List of Acronyms and Abbreviations

AU	assessment unit
BRO	Boise Regional Office
BURP	Beneficial Use Reconnaissance Program
CALM	Consolidated Assessment and Listing Methodology
CRO	Coeur d'Alene Regional Office
CFR	Code of Federal Regulations
CWA	Clean Water Act (federal)
DEQ	Department of Environmental Quality, State of Idaho
EPA	U.S. Environmental Protection Agency
HUC	hydrologic unit code
IFRO	Idaho Falls Regional Office
LRO	Lewiston Regional Office
PRO	Pocatello Regional Office
QA/QC	quality assurance/quality control
RBP	rapid bioassessment protocols
TFRO	Twin Falls Regional Office
WBID	water body identification number

Appendix A. Idaho Stream Survey Design Documentation

Idaho Stream
Survey Design 2011

Contact:

Jason Pappani
Monitoring and Assessment Coordinator
Idaho Department of Environmental Quality
1410 N Hilton
Boise, Idaho 83706
(208) 373-0515
Jason.Pappani@deq.idaho.gov

Description of Survey Design

Target population: All streams and rivers less than or equal to 5th Strahler order within Idaho excluding streams on Native American Reservations and Wilderness areas .

Sample Frame: NHD-Plus for Idaho was used as basis for the sample frame. Only streams with Strahler order 1st thru 5th were included. Also streams that occur on Native American Reservations and Wilderness areas were excluded.

Survey Design: A Generalized Random Tessellation Stratified (GRTS) survey design for a linear resource was used. The GRTS design includes reverse hierarchical ordering of the selected sites.

Multi-density categories: Strahler order categories 1st through 5th.

Stratification: Stratified by six Idaho management regions

Panels: None.

Expected sample size: Total of 50 sites.

Over sample: 300% (150 sites) for a total of 200 sites.

Site Use: Assume the base design has 50 sites. Sites are listed in siteID order and must be used in that order within each stratum. All sites that occur prior to the last site used must have been evaluated for use and then either sampled or reason documented why that site was not used. As an example, if 50 sites are to be sampled and it required that 61 sites be evaluated in order to locate 50 stream sites able to be sampled, then the first 61 sites in siteID order would be used.

It is also permissible to replace sites within each stratum.

Sample Frame Summary

Stream and River length in kilometers

		Excluded Stream Length							
		Perennial			Non Perennial				
Strahler Category	Included Stream Length	Own Include	Own Exclude	Total Perennial	Own Include	Own Exclude	Total Non Perennial	Total Non Perennial Excluded	Total Stream Length
1st_5th	64,220		12,950	12,950	54,093	5,510	59,603	72,552	136,772
6th_8th		2,762	725	3,487	729	64	793	4,280	4,280
Other		3,674	310	3,984	24,849	742	25,591	29,575	29,575
Total	64,220	6,436	13,985	20,420	79,671	6,316	85,986	106,407	170,627

	0	1	2	3	4	5	6	7	8	Sum
Boise	0.00	8796.12	3673.88	2376.01	1328.99	691.87	0.00	0.00	0.00	16866.87
Coeur_d_Alene	0.00	5729.57	2207.90	1046.73	513.93	326.81	0.00	0.00	0.00	9824.95
Idaho_Falls	0.00	8042.40	3484.16	1940.71	1032.30	566.20	0.00	0.00	0.00	15065.76
Lewiston	0.00	7296.56	2662.00	1346.35	666.43	405.66	0.00	0.00	0.00	12377.00
Pocatello	0.00	1435.07	1230.01	878.54	494.70	256.49	0.00	0.00	0.00	4294.80
Twin_Falls	0.00	2821.58	1221.78	838.36	514.45	394.25	0.00	0.00	0.00	5790.41
Boise_Exclude	255.14	16742.49	3665.19	1657.01	605.25	173.24	829.13	287.51	234.74	24449.72
Coeur_d_Alene_Exclude	30.66	2788.58	400.26	191.68	110.14	22.49	197.13	56.95	103.35	3901.25
Idaho_Falls_Exclude	493.56	10288.51	2179.97	771.00	261.81	145.77	668.88	167.99	0.00	14977.49
Lewiston_Exclude	10.89	10660.13	2153.34	880.48	374.81	146.74	278.46	373.50	171.19	15049.56
Pocatello_Exclude	164.35	7660.20	1663.02	557.75	178.08	181.13	298.91	161.09	0.00	10864.52
Twin_Falls_Exclude	61.03	5945.20	1352.27	568.42	141.84	85.57	241.69	209.06	0.00	8605.09
Sum	1015.64	88206.41	25893.77	13053.05	6222.73	3396.22	2514.21	1256.10	509.28	142067.42

Site Selection Summary

Number of sites by Region, Strahler order and panel

Base sites

	1st	2nd	3rd	4th	5th	Sum
Boise	0	3	1	3	2	9
Coeur_d_Alene	1	2	4	0	1	8
Idaho_Falls	2	1	1	3	2	9
Lewiston	1	4	2	0	1	8
Pocatello	0	2	4	0	2	8
Twin_Falls	4	2	0	0	2	8
Sum	8	14	12	6	10	50

Over Sample sites

	1st	2nd	3rd	4th	5th	Sum
Boise	9	7	9	8	3	36
Coeur_d_Alene	6	5	11	6	4	32
Idaho_Falls	8	7	6	11	4	36
Lewiston	11	5	6	4	6	32
Pocatello	6	9	8	5	4	32
Twin_Falls	9	6	10	4	3	32
Sum	49	39	50	38	24	200

Total number of sites

	1st	2nd	3rd	4th	5th	Sum

Coeur_d_Alene	7	7	15	6	5	40
Idaho_Falls	10	8	7	14	6	45
Lewiston	12	9	8	4	7	40
Pocatello	6	11	12	5	6	40
Twin_Falls	13	8	10	4	5	40
Sum	57	53	62	44	34	250

Description of Sample Design Output:

The output is provided as a shapefile for the sites. Note that the ".dbf" file may be read in Excel. The attributes are as follows:

Variable Name	Description
SiteID	Unique site identification (character)
LonDD LatDD x y	Longitude in decimal Degrees (GRS80) Latitude in decimal Degrees (GRS80) x-coordinate from map projection (see below) y-coordinate from map projection (see below)
mdcaty weight stratum	Multi-density categories used for unequal probability selection Weight (in km), inverse of inclusion probability, to be used in statistical analyses Strata used in the survey design
panel	Identifies base sample by panel name and Oversample by OverSamp
EvalStatus EvalReason	Site evaluation decision for site: TS: target and sampled, LD: landowner denied access, etc (see below) Site evaluation text commment
auxiliary variables	Remaining columns are from the sample frame provided

Projection Information

PROJCS["USA_Contiguous_Albers_Equal_Area_Conic_USGS_version",
GEOGCS["GCS_North_American_1983",
DATUM["D_North_American_1983",
SPHEROID["GRS_1980",6378137.0,298.257222101]],
PRIMEM["Greenwich",0.0],
UNIT["Degree",0.0174532925199433]],
PROJECTION["Albers"],
PARAMETER["False_Easting",0.0],
PARAMETER["False_Northing",0.0],
PARAMETER["Central_Meridian",-96.0],
PARAMETER["Standard_Parallel_1",29.5],
PARAMETER["Standard_Parallel_2",45.5],
PARAMETER["Latitude_Of_Origin",37.5],
UNIT["Meter",1.0]],
VERTCS["NAD_1983",
DATUM["D_North_American_1983",
SPHEROID["GRS_1980",6378137.0,298.257222101]],

PARAMETER["Vertical_Shift",0.0],
PARAMETER["Direction",1.0],UNIT["Meter",1.0]]

Evaluation Process

The survey design weights that are given in the design file assume that the survey design is implemented as designed. Typically, users prefer to replace sites that can not be sampled with other sites to achieve the sample size planned. The site replacement process is described above. When sites are replaced, the survey design weights are no longer correct and must be adjusted. The weight adjustment requires knowing what happened to each site in the base design and the over sample sites. EvalStatus is initially set to "NotEval" to indicate that the site has yet to be evaluated for sampling. When a site is evaluated for sampling, then the EvalStatus for the site must be changed. Recommended codes are:

EvalStatus Code	Name	Meaning
TS	Target Sampled	site is a member of the target population and was sampled
LD	Landowner Denial	landowner denied access to the site
PB	Physical Barrier	physical barrier prevented access to the site
NT	Non-Target	site is not a member of the target population
NN	Not Needed	site is a member of the over sample and was not evaluated for sampling
Other codes		Many times useful to have other codes. For example, rather than use NT, may use specific codes indicating why the site was non-target.

Statistical Analysis

Any statistical analysis of data must incorporate information about the monitoring survey design. In particular, when estimates of characteristics for the entire target population are computed, the statistical analysis must account for any stratification or unequal probability selection in the design. Procedures for doing this are available from the Aquatic Resource Monitoring web page given in the bibliography. A statistical analysis library of functions is available from the web page to do common population estimates in the statistical software environment R.

For further information, contact

Anthony (Tony) R. Olsen
USEPA NHEERL
Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333
Voice: (541) 754-4790
Fax: (541) 754-4716
email: Olsen.Tony@epa.gov

Bibliography:

Appendix B. Idaho Stream Survey Site List

Site ID	Longitude (Decimal Degrees)	Lattitude (Decimal Degrees)	Stratum	Panel	Stream Name
IDS11-01	-115.27731	43.56006	Boise	Base	South Fork Boise River
IDS11-02	-115.84148	45.10995	Boise	Base	Enos Creek
IDS11-03	-116.45307	43.64228	Boise	Base	Fivemile Creek
IDS11-04	-115.58605	43.87581	Boise	Base	Ski Creek
IDS11-05	-115.91041	44.05425	Boise	Base	South Fork Payette River
IDS11-06	-116.60218	42.72689	Boise	Base	Louisa Creek
IDS11-07	-116.45940	44.75052	Boise	Base	Weiser River
IDS11-08	-117.18527	44.45769	Boise	Base	Rock Creek
IDS11-09	-115.94998	42.26289	Boise	Base	Marys Creek
IDS11-10	-117.02611	48.47735	Coeur_d_Alene	Base	Upper West Branch Priest River
IDS11-11	-116.71632	48.23290	Coeur_d_Alene	Base	Johnson Creek
IDS11-12	-115.95645	47.79637	Coeur_d_Alene	Base	Shoshone Creek
IDS11-13	-116.41104	47.17726	Coeur_d_Alene	Base	Davis Creek
IDS11-14	-116.44024	48.83118	Coeur_d_Alene	Base	Trout Creek
IDS11-15	-115.76564	47.37720	Coeur_d_Alene	Base	North Fork Saint Joe River
IDS11-16	-116.02087	47.25086	Coeur_d_Alene	Base	Saint Joe River
IDS11-17	-115.86050	46.95852	Coeur_d_Alene	Base	
IDS11-18	-111.27517	44.25516	Idaho_Falls	Base	Warm River
IDS11-19	-111.88044	43.83937	Idaho_Falls	Base	South Teton River
IDS11-20	-113.60516	44.77683	Idaho_Falls	Base	
IDS11-21	-113.66990	44.54923	Idaho_Falls	Base	Patterson Creek
IDS11-22	-114.34297	45.41066	Idaho_Falls	Base	Boulder Creek
IDS11-23	-114.61403	44.25454	Idaho_Falls	Base	Salmon River
IDS11-24	-113.67461	43.74578	Idaho_Falls	Base	Cherry Creek
IDS11-25	-111.52557	43.99941	Idaho_Falls	Base	Fall River
IDS11-26	-114.10482	44.63467	Idaho_Falls	Base	Shep Creek
IDS11-27	-116.54326	46.92584	Lewiston	Base	Big Sand Creek
IDS11-28	-114.76161	45.80713	Lewiston	Base	Selway River
IDS11-29	-115.51007	46.37647	Lewiston	Base	Yew Creek
IDS11-30	-115.78403	46.38199	Lewiston	Base	Swede Creek
IDS11-31	-115.44839	45.84943	Lewiston	Base	Big Elk Creek
IDS11-32	-116.35702	46.70780	Lewiston	Base	Chambers Creek
IDS11-33	-115.11420	46.76076	Lewiston	Base	Moose Creek
IDS11-34	-116.23542	45.12584	Lewiston	Base	Hard Creek
IDS11-35	-112.25980	42.14964	Pocatello	Base	
IDS11-36	-111.25310	42.97142	Pocatello	Base	Tincup Creek
IDS11-37	-111.15416	42.83832	Pocatello	Base	Diamond Boulder Creek
IDS11-38	-112.09313	42.62428	Pocatello	Base	Portneuf River
IDS11-39	-111.51116	42.09585	Pocatello	Base	Saint Charles Creek
IDS11-40	-111.46015	42.76763	Pocatello	Base	
IDS11-41	-112.24944	42.79079	Pocatello	Base	Portneuf River
IDS11-42	-112.85591	42.69300	Pocatello	Base	Cold Creek
IDS11-43	-114.85201	43.83002	Twin_Falls	Base	
IDS11-44	-114.61849	42.95400	Twin_Falls	Base	Little Wood River
IDS11-45	-114.27925	43.37485	Twin_Falls	Base	Big Wood River
IDS11-46	-113.56884	42.33571	Twin_Falls	Base	Howell Creek
IDS11-47	-114.53787	43.57557	Twin_Falls	Base	Deer Creek
IDS11-48	-114.00353	43.76058	Twin_Falls	Base	Little Wood River
IDS11-49	-114.08719	42.15448	Twin_Falls	Base	Squaw Creek
IDS11-50	-114.15239	42.26845	Twin_Falls	Base	Coal Pit Creek
IDS11-051	-116.85431	43.02398	Boise	OverSamp	Jordan Creek
IDS11-052	-115.62649	43.58584	Boise	OverSamp	Rattlesnake Creek
IDS11-053	-115.20867	43.71914	Boise	OverSamp	Alta Creek
IDS11-054	-115.92142	44.43488	Boise	OverSamp	
IDS11-055	-115.59527	43.19127	Boise	OverSamp	Rattlesnake Creek
IDS11-056	-116.00057	43.83471	Boise	OverSamp	North Fork Rattlesnake Creek
IDS11-057	-116.71497	44.10330	Boise	OverSamp	Little Willow Creek
IDS11-058	-115.42002	44.21193	Boise	OverSamp	

Site ID	Longitude (Decimal Degrees)	Lattitude (Decimal Degrees)	Stratum	Panel	Stream Name
IDS11-059	-115.99405	42.58691	Boise	OverSamp	Big Jacks Creek
IDS11-060	-115.91894	43.75869	Boise	OverSamp	Mores Creek
IDS11-061	-117.13759	44.45403	Boise	OverSamp	
IDS11-062	-115.62890	44.80569	Boise	OverSamp	Fourmile Creek
IDS11-063	-115.14618	43.14681	Boise	OverSamp	Thorn Creek
IDS11-064	-115.26643	44.07071	Boise	OverSamp	
IDS11-065	-116.14741	44.79807	Boise	OverSamp	North Fork Payette River
IDS11-066	-115.55565	44.70651	Boise	OverSamp	Johnson Creek
IDS11-067	-116.57009	42.74710	Boise	OverSamp	Rock Creek
IDS11-068	-115.60905	43.96908	Boise	OverSamp	Beaver Creek
IDS11-069	-116.36008	44.90338	Boise	OverSamp	Beaver Creek
IDS11-070	-115.70087	44.89249	Boise	OverSamp	
IDS11-071	-116.67320	45.09530	Boise	OverSamp	Indian Creek
IDS11-072	-115.53682	43.92290	Boise	OverSamp	Big Owl Creek
IDS11-073	-116.06087	44.74352	Boise	OverSamp	Boulder Creek
IDS11-074	-116.86007	42.89077	Boise	OverSamp	Jordan Creek
IDS11-075	-115.22837	42.13545	Boise	OverSamp	Big Flat Creek
IDS11-076	-116.55523	43.58245	Boise	OverSamp	Indian Creek
IDS11-077	-116.74174	44.30812	Boise	OverSamp	
IDS11-078	-115.92811	44.10571	Boise	OverSamp	Anderson Creek
IDS11-079	-115.37640	42.45024	Boise	OverSamp	Clover Creek
IDS11-080	-115.74364	44.10198	Boise	OverSamp	Fir Creek
IDS11-081	-116.69425	44.50545	Boise	OverSamp	Weiser River
IDS11-082	-115.54323	44.17861	Boise	OverSamp	
IDS11-083	-115.77873	45.07287	Boise	OverSamp	Lick Creek
IDS11-084	-115.08289	43.45611	Boise	OverSamp	South Fork Lime Creek
IDS11-085	-116.31235	44.31726	Boise	OverSamp	Squaw Creek
IDS11-086	-116.81408	42.64901	Boise	OverSamp	
IDS11-087	-116.43683	48.37284	Coeur_d_Alene	OverSamp	Pack River
IDS11-088	-116.06399	48.45992	Coeur_d_Alene	OverSamp	Frezkat Creek
IDS11-089	-116.40474	48.08624	Coeur_d_Alene	OverSamp	
IDS11-090	-115.77388	47.38014	Coeur_d_Alene	OverSamp	North Fork Saint Joe River
IDS11-091	-116.80094	48.73402	Coeur_d_Alene	OverSamp	North Fork Squaw Creek
IDS11-092	-116.34802	48.92386	Coeur_d_Alene	OverSamp	Mission Creek
IDS11-093	-116.22917	47.72225	Coeur_d_Alene	OverSamp	West Fork Steamboat Creek
IDS11-094	-115.71222	47.23044	Coeur_d_Alene	OverSamp	Saint Joe River
IDS11-095	-116.96115	48.28679	Coeur_d_Alene	OverSamp	Lower West Branch Priest River
IDS11-096	-116.20533	47.20888	Coeur_d_Alene	OverSamp	Mica Creek
IDS11-097	-116.97793	48.10133	Coeur_d_Alene	OverSamp	McDonald Creek
IDS11-098	-115.95760	47.80214	Coeur_d_Alene	OverSamp	Shoshone Creek
IDS11-099	-116.39188	48.56263	Coeur_d_Alene	OverSamp	Deep Creek
IDS11-100	-116.39146	47.32247	Coeur_d_Alene	OverSamp	Saint Joe River
IDS11-101	-115.10581	46.97161	Coeur_d_Alene	OverSamp	Boundary Creek
IDS11-102	-115.95910	47.80017	Coeur_d_Alene	OverSamp	Shoshone Creek
IDS11-103	-116.86589	48.39234	Coeur_d_Alene	OverSamp	Priest River
IDS11-104	-116.39670	48.35314	Coeur_d_Alene	OverSamp	Pack River
IDS11-105	-116.52578	47.71558	Coeur_d_Alene	OverSamp	Phantom Creek
IDS11-106	-115.55826	47.21540	Coeur_d_Alene	OverSamp	Saint Joe River
IDS11-107	-116.58832	48.52747	Coeur_d_Alene	OverSamp	Pack River
IDS11-108	-116.52808	47.20753	Coeur_d_Alene	OverSamp	Flat Creek
IDS11-109	-116.66156	47.71064	Coeur_d_Alene	OverSamp	
IDS11-110	-115.95962	47.24837	Coeur_d_Alene	OverSamp	Saint Joe River
IDS11-111	-116.69948	48.98075	Coeur_d_Alene	OverSamp	Saddle Creek
IDS11-112	-116.19842	47.00429	Coeur_d_Alene	OverSamp	Middle Fork Saint Maries River
IDS11-113	-115.70085	46.94812	Coeur_d_Alene	OverSamp	Little North Fork Clearwater River
IDS11-114	-116.08845	47.62854	Coeur_d_Alene	OverSamp	Graham Creek
IDS11-115	-116.45227	48.82943	Coeur_d_Alene	OverSamp	Trout Creek

Site ID	Longitude (Decimal Degrees)	Lattitude (Decimal Degrees)	Stratum	Panel	Stream Name
IDS11-116	-116.11761	47.36907	Coeur_d_Alene	OverSamp	Middle Fork Big Creek
IDS11-117	-115.91843	47.44056	Coeur_d_Alene	OverSamp	Placer Creek
IDS11-118	-116.21986	48.07789	Coeur_d_Alene	OverSamp	Derr Creek
IDS11-119	-111.30742	44.31824	Idaho_Falls	OverSamp	Warm River
IDS11-120	-111.13299	43.34526	Idaho_Falls	OverSamp	Little Elk Creek
IDS11-121	-114.62963	44.41603	Idaho_Falls	OverSamp	Yankee Fork
IDS11-122	-113.93121	44.04072	Idaho_Falls	OverSamp	Big Lost River
IDS11-123	-111.28616	43.91204	Idaho_Falls	OverSamp	Teton River
IDS11-124	-113.40319	44.71198	Idaho_Falls	OverSamp	Lemhi River
IDS11-125	-114.68840	44.35955	Idaho_Falls	OverSamp	Adair Creek
IDS11-126	-114.16122	43.89685	Idaho_Falls	OverSamp	North Fork Big Lost River
IDS11-127	-111.68118	43.56721	Idaho_Falls	OverSamp	Birch Creek
IDS11-128	-114.56090	44.94645	Idaho_Falls	OverSamp	Little Jacket Creek
IDS11-129	-113.58772	44.35194	Idaho_Falls	OverSamp	Goldburg Creek
IDS11-130	-111.89746	44.42054	Idaho_Falls	OverSamp	East Camas Creek
IDS11-131	-111.45341	43.13589	Idaho_Falls	OverSamp	Grays Lake Outlet
IDS11-132	-114.37835	45.46142	Idaho_Falls	OverSamp	Owl Creek
IDS11-133	-113.79462	44.78288	Idaho_Falls	OverSamp	Deer Creek
IDS11-134	-114.93103	44.19278	Idaho_Falls	OverSamp	Salmon River
IDS11-135	-111.96243	43.40494	Idaho_Falls	OverSamp	Dry Fork
IDS11-136	-114.23222	45.09377	Idaho_Falls	OverSamp	Panther Creek
IDS11-137	-113.86277	44.09472	Idaho_Falls	OverSamp	
IDS11-138	-112.19071	44.40541	Idaho_Falls	OverSamp	Beaver Creek
IDS11-139	-111.49270	43.37647	Idaho_Falls	OverSamp	
IDS11-140	-113.97020	45.65284	Idaho_Falls	OverSamp	North Fork Salmon River
IDS11-141	-113.86291	44.53438	Idaho_Falls	OverSamp	Pahsimeroi River
IDS11-142	-114.78715	44.52406	Idaho_Falls	OverSamp	West Fork Mayfield Creek
IDS11-143	-111.25703	44.11100	Idaho_Falls	OverSamp	Robinson Creek
IDS11-144	-113.19931	44.76125	Idaho_Falls	OverSamp	Frank Hall Creek
IDS11-145	-114.36951	44.11346	Idaho_Falls	OverSamp	Pine Creek
IDS11-146	-113.60580	43.82476	Idaho_Falls	OverSamp	Alder Creek
IDS11-147	-111.43833	43.79722	Idaho_Falls	OverSamp	Canyon Creek
IDS11-148	-113.30229	44.42518	Idaho_Falls	OverSamp	
IDS11-149	-114.21392	44.31870	Idaho_Falls	OverSamp	
IDS11-150	-111.44849	44.50804	Idaho_Falls	OverSamp	East Fork Hotel Creek
IDS11-151	-111.37674	43.34144	Idaho_Falls	OverSamp	
IDS11-152	-113.78569	45.19171	Idaho_Falls	OverSamp	
IDS11-153	-113.44523	43.85227	Idaho_Falls	OverSamp	Big Lost River
IDS11-154	-115.12574	44.36776	Idaho_Falls	OverSamp	Knapp Creek
IDS11-155	-115.08067	45.82552	Lewiston	OverSamp	
IDS11-156	-115.48072	46.82880	Lewiston	OverSamp	Skull Creek
IDS11-157	-115.50919	46.61694	Lewiston	OverSamp	Orogrande Creek
IDS11-158	-116.60206	46.93339	Lewiston	OverSamp	Sypah Creek
IDS11-159	-115.38500	46.04205	Lewiston	OverSamp	Sob Creek
IDS11-160	-114.87229	46.45537	Lewiston	OverSamp	Warm Springs Creek
IDS11-161	-115.52631	46.26773	Lewiston	OverSamp	Deadman Creek
IDS11-162	-116.92233	46.92461	Lewiston	OverSamp	Palouse River
IDS11-163	-116.03900	45.83587	Lewiston	OverSamp	Dump Creek
IDS11-164	-114.67639	46.52949	Lewiston	OverSamp	Crooked Fork
IDS11-165	-115.75971	46.86572	Lewiston	OverSamp	Thrasher Creek
IDS11-166	-116.36249	45.30713	Lewiston	OverSamp	Little Salmon River
IDS11-167	-115.51515	45.63868	Lewiston	OverSamp	
IDS11-168	-115.31857	46.33888	Lewiston	OverSamp	Lochsa River
IDS11-169	-116.23898	46.83375	Lewiston	OverSamp	
IDS11-170	-116.43564	45.43909	Lewiston	OverSamp	South Fork Race Creek
IDS11-171	-115.00435	45.86404	Lewiston	OverSamp	Running Creek
IDS11-172	-115.13466	46.71734	Lewiston	OverSamp	Kelly Creek

Site ID	Longitude (Decimal Degrees)	Lattitude (Decimal Degrees)	Stratum	Panel	Stream Name
IDS11-173	-115.65173	46.29182	Lewiston	OverSamp	Eldorado Creek
IDS11-174	-116.45483	46.77252	Lewiston	OverSamp	Potlatch River
IDS11-175	-115.65085	45.93393	Lewiston	OverSamp	Haysfork Creek
IDS11-176	-115.39583	46.45528	Lewiston	OverSamp	Little Weitas Creek
IDS11-177	-115.81745	46.31048	Lewiston	OverSamp	
IDS11-178	-116.22577	45.20553	Lewiston	OverSamp	Hazard Creek
IDS11-179	-115.75932	45.98926	Lewiston	OverSamp	South Fork Clear Creek
IDS11-180	-115.04466	46.71882	Lewiston	OverSamp	Kelly Creek
IDS11-181	-116.38932	46.91980	Lewiston	OverSamp	Potlatch River
IDS11-182	-116.18825	45.64094	Lewiston	OverSamp	Hurley Creek
IDS11-183	-115.36960	45.71745	Lewiston	OverSamp	Red River
IDS11-184	-116.06763	46.45313	Lewiston	OverSamp	Cook Creek
IDS11-185	-116.62647	46.06963	Lewiston	OverSamp	Maloney Creek
IDS11-186	-116.28267	45.74891	Lewiston	OverSamp	
IDS11-187	-111.73947	43.14832	Pocatello	OverSamp	Willow Creek
IDS11-188	-111.50521	42.81200	Pocatello	OverSamp	Blackfoot River
IDS11-189	-112.22094	42.01484	Pocatello	OverSamp	Malad River
IDS11-190	-111.40944	42.29001	Pocatello	OverSamp	Ovid Creek
IDS11-191	-111.96510	43.33333	Pocatello	OverSamp	Taylor Creek
IDS11-192	-111.59285	43.03322	Pocatello	OverSamp	Meadow Creek
IDS11-193	-112.24336	42.78823	Pocatello	OverSamp	Portneuf River
IDS11-194	-111.12817	42.25599	Pocatello	OverSamp	Sheep Creek
IDS11-195	-112.14173	42.84666	Pocatello	OverSamp	North Fork Inman Creek
IDS11-196	-111.27865	42.97821	Pocatello	OverSamp	Tincup Creek
IDS11-197	-112.77710	43.01783	Pocatello	OverSamp	
IDS11-198	-111.76578	42.39595	Pocatello	OverSamp	
IDS11-199	-111.78792	42.93608	Pocatello	OverSamp	Grizzly Creek
IDS11-200	-112.19871	42.44886	Pocatello	OverSamp	Marsh Creek
IDS11-201	-111.73622	42.04466	Pocatello	OverSamp	Maple Creek
IDS11-202	-111.65521	42.31459	Pocatello	OverSamp	Strawberry Creek
IDS11-203	-111.74954	43.24859	Pocatello	OverSamp	
IDS11-204	-111.34409	42.82706	Pocatello	OverSamp	Blackfoot River
IDS11-205	-112.80062	42.71530	Pocatello	OverSamp	West Fork Sunbean Creek
IDS11-206	-111.15420	42.47487	Pocatello	OverSamp	Beaver Creek
IDS11-207	-111.59040	43.24003	Pocatello	OverSamp	Grays Lake Outlet
IDS11-208	-111.29317	42.82536	Pocatello	OverSamp	
IDS11-209	-112.22965	42.60930	Pocatello	OverSamp	Marsh Creek
IDS11-210	-111.45056	42.42085	Pocatello	OverSamp	Stauffer Creek
IDS11-211	-111.94019	42.79753	Pocatello	OverSamp	Portneuf River
IDS11-212	-112.33095	42.40904	Pocatello	OverSamp	
IDS11-213	-112.85578	42.59561	Pocatello	OverSamp	Spring Creek
IDS11-214	-111.85321	42.50235	Pocatello	OverSamp	Densmore Creek
IDS11-215	-111.90435	43.00472	Pocatello	OverSamp	Warbonnet Creek
IDS11-216	-112.25918	42.15420	Pocatello	OverSamp	
IDS11-217	-112.04530	42.05684	Pocatello	OverSamp	Weston Creek
IDS11-218	-111.83582	42.30027	Pocatello	OverSamp	Battle Creek
IDS11-219	-114.21142	43.15770	Twin_Falls	OverSamp	Jim Byrns Slough
IDS11-220	-114.67376	43.48910	Twin_Falls	OverSamp	Devils Dive Creek
IDS11-221	-113.96706	43.48000	Twin_Falls	OverSamp	South Fork Muldoon Creek
IDS11-222	-114.40314	42.18996	Twin_Falls	OverSamp	Shoshone Creek
IDS11-223	-114.62539	43.60263	Twin_Falls	OverSamp	
IDS11-224	-114.79011	43.22059	Twin_Falls	OverSamp	McKinney Creek
IDS11-225	-114.05895	43.48097	Twin_Falls	OverSamp	Little Wood River
IDS11-226	-114.17577	42.16330	Twin_Falls	OverSamp	Big Cottonwood Creek
IDS11-227	-114.49528	43.52690	Twin_Falls	OverSamp	Deer Creek
IDS11-228	-114.72408	43.90418	Twin_Falls	OverSamp	
IDS11-229	-113.62963	42.01188	Twin_Falls	OverSamp	Raft River

Site ID	Longitude (Decimal Degrees)	Lattitude (Decimal Degrees)	Stratum	Panel	Stream Name
IDS11-230	-114.38176	42.32192	Twin_Falls	OverSamp	McMullen Creek
IDS11-231	-114.81161	43.54801	Twin_Falls	OverSamp	Little Smoky Creek
IDS11-232	-114.78817	43.84550	Twin_Falls	OverSamp	Frenchman Creek
IDS11-233	-114.14941	43.05845	Twin_Falls	OverSamp	Jim Byrns Slough
IDS11-234	-113.77228	42.08740	Twin_Falls	OverSamp	Birch Creek
IDS11-235	-114.56636	43.37769	Twin_Falls	OverSamp	Willow Creek
IDS11-236	-114.85986	43.13378	Twin_Falls	OverSamp	
IDS11-237	-114.07688	43.69621	Twin_Falls	OverSamp	Iron Mine Creek
IDS11-238	-114.44257	42.04045	Twin_Falls	OverSamp	Shoshone Creek
IDS11-239	-114.38567	43.48429	Twin_Falls	OverSamp	
IDS11-240	-114.70446	43.81200	Twin_Falls	OverSamp	
IDS11-241	-114.15830	43.35146	Twin_Falls	OverSamp	Loving Creek
IDS11-242	-113.90030	42.02676	Twin_Falls	OverSamp	
IDS11-243	-114.87469	43.41861	Twin_Falls	OverSamp	West Fork Threemile Creek
IDS11-244	-114.90377	43.74238	Twin_Falls	OverSamp	Emma Creek
IDS11-245	-114.64461	42.93342	Twin_Falls	OverSamp	Little Wood River
IDS11-246	-113.63726	42.22328	Twin_Falls	OverSamp	Dry Creek
IDS11-247	-114.93420	43.58598	Twin_Falls	OverSamp	Boardman Creek
IDS11-248	-115.08581	43.07195	Twin_Falls	OverSamp	Dry Creek
IDS11-249	-114.93146	42.16862	Twin_Falls	OverSamp	Cedar Creek
IDS11-250	-113.49776	42.33443	Twin_Falls	OverSamp	Summit Creek

Appendix C. National Wetland Condition Assessment (NWCA) Site List

SiteID	Longitude	Latitude	State	Panel (Revisit, Base, Oversample)
NWCA11-1489	-115.6206	44.39775	ID	Revisit
NWCA11-1490	-116.2004	48.95572	ID	Revisit
NWCA11-1491	-114.5979	43.00099	ID	Base
NWCA11-1492	-114.6735	43.32226	ID	Base
NWCA11-1493	-116.7388	44.52628	ID	Base
NWCA11-1494	-116.185	48.94558	ID	Base
NWCA11-1495	-114.5991	43.0034	ID	Base
NWCA11-1496	-111.8929	44.43192	ID	Base
NWCA11-1497	-116.1496	44.86724	ID	Base
NWCA11-1498	-116.1874	48.94555	ID	Base
NWCA11-1499	-114.5667	42.66234	ID	Base
NWCA11-1500	-111.8736	44.43749	ID	Base
NWCA11-1501	-116.1375	44.87343	ID	Base
NWCA11-1502	*-115.632*	*46.51908*	*ID*	*Oversample*
NWCA11-1503	*-114.687*	*43.34*	*ID*	*Oversample*
NWCA11-1504	*-115.435*	*44.72403*	*ID*	*Oversample*
NWCA11-1505	*-116.531*	*45.13964*	*ID*	*Oversample*
NWCA11-1506	*-114.598*	*43.00331*	*ID*	*Oversample*
NWCA11-1507	*-115.546*	*46.46062*	*ID*	*Oversample*
NWCA11-1508	*-111.878*	*44.41646*	*ID*	*Oversample*
NWCA11-1509	*-116.354*	*46.07008*	*ID*	*Oversample*
NWCA11-1510	*-114.674*	*43.32442*	*ID*	*Oversample*
NWCA11-1511	*-116.195*	*48.95096*	*ID*	*Oversample*
NWCA11-1512	*-114.674*	*43.32457*	*ID*	*Oversample*
NWCA11-1513	*-112.419*	*43.91524*	*ID*	*Oversample*
NWCA11-1514	*-115.446*	*44.73615*	*ID*	*Oversample*
NWCA11-3289	*-116.183*	*48.94168*	*ID*	*Oversample*
NWCA11-3290	*-114.599*	*43.00331*	*ID*	*Oversample*
NWCA11-3291	*-115.458*	*44.73893*	*ID*	*Oversample*
NWCA11-3292	*-115.62*	*44.38384*	*ID*	*Oversample*
NWCA11-3293	*-116.183*	*48.94173*	*ID*	*Oversample*
NWCA11-3294	*-114.551*	*42.65828*	*ID*	*Oversample*
NWCA11-3295	*-111.896*	*44.408*	*ID*	*Oversample*
NWCA11-3296	*-116.131*	*44.86941*	*ID*	*Oversample*
NWCA11-3297	*-115.579*	*46.46869*	*ID*	*Oversample*
NWCA11-3298	*-114.674*	*43.32445*	*ID*	*Oversample*
NWCA11-3299	*-111.898*	*44.42415*	*ID*	*Oversample*
NWCA11-3300	*-116.138*	*44.87374*	*ID*	*Oversample*
NWCA11-3301	*-112.45*	*43.91055*	*ID*	*Oversample*
NWCA11-3302	*-114.674*	*43.32448*	*ID*	*Oversample*
NWCA11-3303	*-115.619*	*44.39918*	*ID*	*Oversample*
NWCA11-3304	*-116.35*	*46.87191*	*ID*	*Oversample*
NWCA11-3305	*-115.762*	*47.43565*	*ID*	*Oversample*
NWCA11-3306	*-111.879*	*44.42675*	*ID*	*Oversample*
NWCA11-3307	*-114.675*	*43.32472*	*ID*	*Oversample*
NWCA11-3308	*-115.457*	*43.08137*	*ID*	*Oversample*
NWCA11-3309	*-114.053*	*43.55288*	*ID*	*Oversample*
NWCA11-3310	*-115.592*	*44.38704*	*ID*	*Oversample*
NWCA11-3311	*-114.599*	*43.00315*	*ID*	*Oversample*
NWCA11-3312	*-116.123*	*44.88499*	*ID*	*Oversample*
NWCA11-3313	*-115.444*	*44.74826*	*ID*	*Oversample*
NWCA11-3314	*-116.354*	*46.06983*	*ID*	*Oversample*

Appendix D. List of Candidate Reference Lakes

Lake Name	HUC	DEQ Region	LakeSqKm
Robinson Lake	17010105	CRO	0.218
Solomon Lake	17010105	CRO	0.044
Priest Lake	17010215	CRO	5.424
Lower Glidden Lake	17010302	CRO	0.075
Twentyfour Mile Reservoir	17040208	PRO	0.138
Sublett Reservoir	17040210	TRO	0.324
Cedar Mesa Reservoir	17040213	TRO	0.095
Thorn Creek Reservoir	17040219	TRO	0.446
wL 5097T	17040220	TRO	0.213
Jacks Creek Reservoir	17050102	TRO	0.080
Buckhorn Reservoir	17050102	TRO	0.459
Star Reservoir	17050104	BRO	0.157
Big Blue Creek Reservoir	17050104	BRO	0.744
Shoofly Reservoir	17050104	BRO	0.355
Bybee Reservoir	17050104	BRO	0.276
Juniper Basin Reservoir	17050104	BRO	0.979
Tent Creek Reservoir	17050106	BRO	0.085
Stanley Lake	17060201	IRO	0.713
Little Redfish Lake	17060201	IRO	0.260
Redfish Lake	17060201	IRO	6.120
Cape Horn Lakes	17060205	BRO	0.135
Wildhorse Lake	17060207	LRO	0.067
Big Hazard Lake	17060210	BRO/LRO	0.576
Hazard Lake	17060210	BRO/LRO	0.255
Black Lake	17060210	BRO/LRO	0.104
Goose Lake	17060210	BRO/LRO	1.481
Brundage Reservoir	17060210	BRO/LRO	0.874
Lost Lake	17060308	LRO	0.109
Gamlin Lake	17010214	CRO	0.415
Deadwood Reservoir	17050120	BRO	12.206
Bull Trout Lake	17050120	BRO	0.279
Sage Hen Reservoir	17050122	BRO	0.716
Upper Payette Lake	17050123	BRO	1.221
Granite Lake	17050123	BRO	0.759
Horsethief Reservoir	17050123	BRO	1.007
Blue Lake	17050123	BRO	0.053
Henrys Lake	17040202	IRO	24.592