Lower Boise River

TMDL Five-Year Review



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Lower Boise River
TMDL Five-Year Review

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Abbreviations, Acronyms, and Symbols

§303(d) Refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section

µ micro, one-one thousandth

§ Section (usually a section of federal or state rules or statutes)

ADB assessment database

AU assessment unit

AWS agricultural water supply

BAG Basin Advisory Group

BLM United States Bureau of Land Management

BMP best management practice

BOD biochemical oxygen demand

BOR United States Bureau of Reclamation

Btu British thermal unit

BURP Beneficial Use Reconnaissance Program

C Celsius

CFR Code of Federal Regulations (refers to citations in federal administrative rules)

cfs cubic feet per second

cm centimeters

COLD Cold Water Communities

CWA Clean Water Act

CWAL cold water aquatic life

CWE cumulative watershed effects

DEQ Department of Environmental Quality

DO dissolved oxygen

DOI U.S. Department of the Interior

DWS domestic water supply

EMAP Environmental Monitoring and Assessment Program

EPA United States Environmental Protection Agency

ESA Endangered Species Act

F Fahrenheit

FPA Idaho Forest Practices Act

FWS U.S. Fish and Wildlife Service

GIS Geographical Information Systems

HUC Hydrologic Unit Code

I.C. Idaho Code

IDAPA Refers to citations of Idaho administrative rules

IDFG Idaho Department of Fish and Game

IDL Idaho Department of Lands

IDWR Idaho Department of Water Resources

INFISH the federal Inland Native Fish Strategy

IRIS Integrated Risk Information System

km kilometer

km^2 square kilometer

LA load allocation

LC load capacity

m meter

m^3 cubic meter

mi mile

mi^2 square miles

MBI Macroinvertebrate Biotic Index

MGD million gallons per day

mg/L milligrams per liter

mm millimeter

MOD* Modified Communities (*not approved by EPA)

MOS margin of safety

MRCL multiresolution land cover

MWMT maximum weekly maximum temperature

n.a. not applicable

NA not assessed

NB natural background

nd no data (data not available)

NFS not fully supporting

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resources Conservation Service

NTU Nephelometric turbidity unit

ORV off-road vehicle

ORW Outstanding Resource Water

PACFISH the federal Pacific Anadromous Fish Strategy

PCR primary contact recreation

PFC proper functioning condition

ppm part(s) per million

QA quality assurance

QC quality control

RBP rapid bioassessment protocol

RDI DEQ's River Diatom Index

RFI DEQ's River Fish Index

RHCA riparian habitat conservation area

RMI DEQ's River Macroinvertebrate Index

RPI DEQ's River Physiochemical Index

SBA subbasin assessment

SC Seasonal Cold Water Communities

SCR secondary contact recreation

SFI DEQ's Stream Fish Index

SHI DEQ's Stream Habitat Index

SMI DEQ's Stream Macroinvertebrate Index

SRP soluble reactive phosphorus

SS salmonid spawning

SSC suspended sediment concentration in milligrams per liter

SSOC stream segment of concern

STATSGO State Soil Geographic Database

TDG total dissolved gas

TDS total dissolved solids

T&E threatened and/or endangered species

TIN total inorganic nitrogen

TKN total Kjeldahl nitrogen

TMDL total maximum daily load

TP total phosphorus

TS total solids

TSS total suspended solids

t/y tons per year

U.S. United States

U.S.C. United States Code

USDA United States Department of Agriculture

USDI United States Department of the Interior

USFS United States Forest Service

USGS United States Geological Survey

WAG Watershed Advisory Group

WARM Warm Water Communities

WBAG *Water Body Assessment Guidance*

WBID water body identification number

WET whole effluence toxicity

WLA wasteload allocation

WQLS water quality limited segment

WQMP water quality management plan

WQRP water quality restoration plan

WQS water quality standard

Executive Summary

This document presents a five-year review of the Lower Boise River Subbasin Assessment (SBA) and Total Maximum Daily Loads (TMDLs) for bacteria and sediment. This review addresses the water bodies in the Lower Boise River Subbasin that are in Idaho's current and most recent draft Section 4(a) of the Integrated Report. This five-year review has been developed to comply with Idaho Statute 39-3611 (7). The review describes current water quality status, pollutant sources, and recent pollution control efforts in the Lower Boise River Subbasin, located in southwest Idaho.

The TMDLs subject to five-year review are shown in Table A. The initial SBA and TMDL for the mainstem and SBAs for the tributaries are available from the Department of Environmental Quality (DEQ) Web site at http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm and describe the physical, biological, and cultural setting; water quality status; pollutant sources; and previous pollution control actions in the subbasin.

Based on the results of the five-year review, recommendations for the next (2010) Integrated Report are as follows:

- 30 assessment units (AUs) listed in Section 4c (Rivers Impaired by Flow or Habitat Alteration)
- 7 AUs listed in Section 5 (Impaired Waters)
- 9 AUs listed in Section 3 (Unassessed Waters)
- 7 AUs de-listed for impairments listed in the draft 2008 Integrated Report
- Develop 5 TMDLs for currently listed impairments.
- 1 AU listed in Section 2 (Supporting All Uses)

Rationale for recommendations is provided in the discussion of each AU in this sections' Summary of Decisions.

About Assessment Units

Prior to 2002, impaired waters were defined as stream segments with geographical descriptive boundaries. In 2002, DEQ modified the structure and format of Idaho's 303(d) list by combining it with the 305(b) report, which is required by the Clean Water Act (CWA) to inform Congress of the state of Idaho's waters. This modification included identifying stream segments by assessment units (AUs) instead of non-uniform stream segments, and defining the use support of stream AUs by five categories, each of which is published as a section in the integrated report. AUs now define all the waters of the state of Idaho. These units and the methods used to describe them can be found in the Water Body Assessment Guidance, second edition (WBAG II) (Grafe, et al., 2002). AUs are groups of similar streams that have similar land use practices, ownership, or land management. Stream order, however, is the main basis for determining AUs— even if ownership and land use change significantly, an AU remains the same. Because AUs are an extension of water body identification numbers, and each water body has individual WQS, there is now a direct tie between AUs and water quality standards (WQS), so that beneficial uses defined in the WQS are clearly tied to streams on the landscape.

To facilitate comparisons between the 1998 303(d) list and the 2002 Section 5 "impaired waters" category in the Integrated Report, a crosswalk from the 1998 303(d) list to the new

AUs was included in the 2002 integrated report. A copy of the report is available from the DEQ Web site at http://www.deq.state.id.us/water/data_reports/surface_water/monitoring/2002.cfm#2002final. The boundaries from the 1998 303(d)-listed segments have been transferred to the new AU framework using an approach quite similar to how DEQ has been writing SBAs and TMDLs. All AUs contained in any listed segment were carried forward to the 2002 303(d) listings in Section 5 of the integrated report (DEQ, 2005). Any AU not wholly contained within a previously listed segment, but partially contained (even minimally), was also included on the 303(d) list. This was necessary to maintain the integrity of the 1998 303(d) list and continuity with the TMDL program. The Lower Boise River subbasin water bodies listed on the 2002 303(d) list are included in this report, but the review is focused on the draft 2008 status lists.

When new monitoring data indicate full support, only the AU that the data represents will be removed (de-listed) from the 303(d) list (Section 5 of the integrated report).

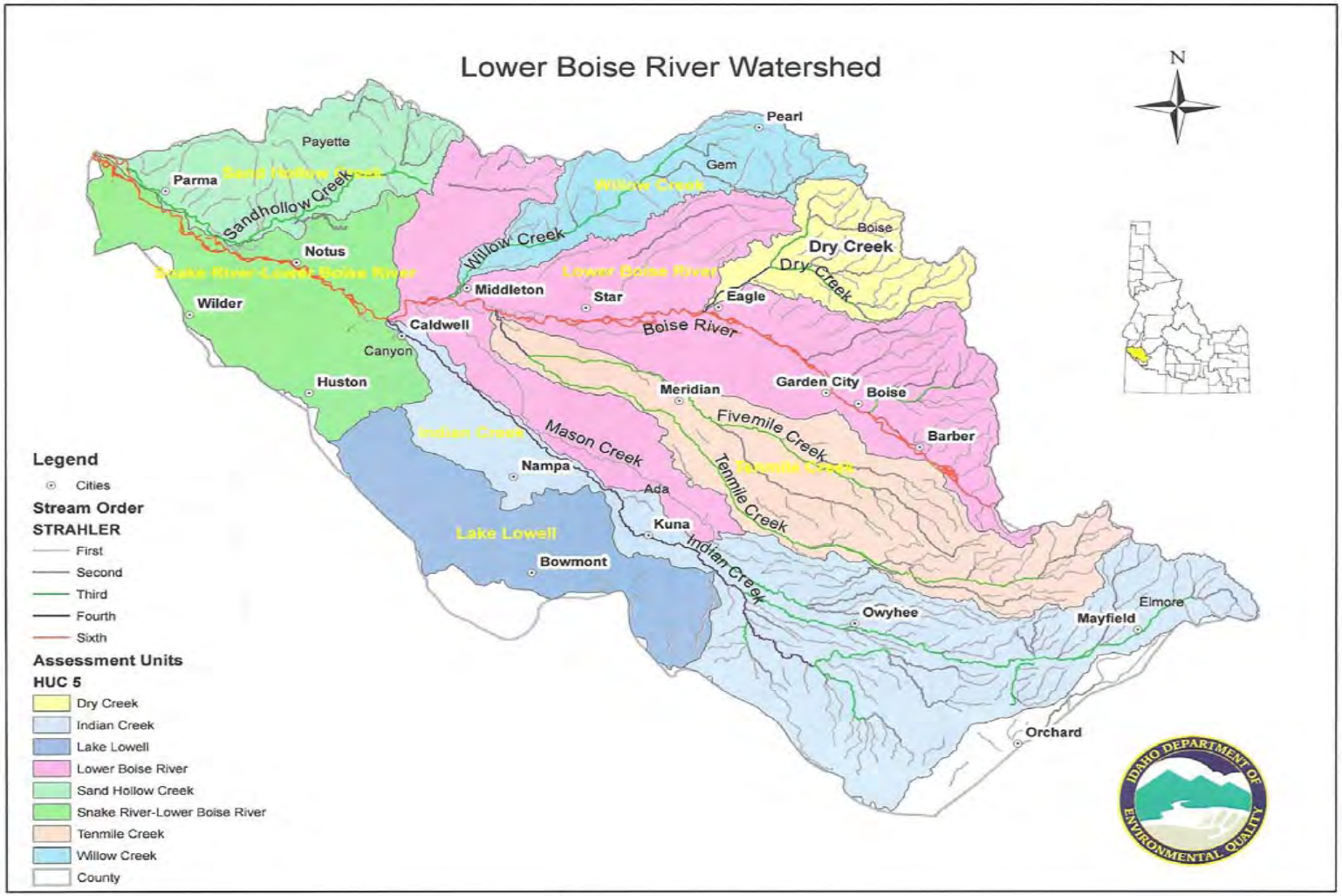


Figure A. Streams and assessment units in Lower Boise River HUC 17050114.

TMDL Targets and Load Allocations

The 1999 TMDL established targets for sediment and bacteria in the mainstem river with control monitoring for sediment at two locations (USGS gages at Middleton and Parma) and for bacteria at three locations (USGS gages at Glenwood, Middleton and Parma). Recognizing that sediment and bacteria loads in the mainstem river were most likely the result of cumulative effects of loads from influent sources such as tributaries and drains, load allocations (LAs) for sediment and bacteria were established at the mouths of 12 tributary and drain locations and 3 riparian corridors. Assigning LAs for tributaries and drains is not synonymous with listing those tributaries and drains as impaired for sediment and bacteria. The purpose of the LAs is to restore the listed waterbody (Lower Boise River) to beneficial use support status.

Table A. 1999 TMDLs and correlating assessment units from 2002 Water Quality Standards revisions and associated load allocations, implementation activities and monitoring data.

Stream Segment Description	Assessment Unit	TMDL	Load Allocation	Implementation Plan	Implementation Activities	Monitoring Data
Boise River 6th order from Indian Creek to the mouth, and tributaries to the 6th order.	001_06	Lower Boise River TMDL (1999). Addendum (2008). Snake River-Hells Canyon (2004).	Target for TSS-50 mg/L for 60 days, 80 mg/L 14 days; 213 cfu/100 ml (geomean) fecal coliform 242 kg/day (<0.07 mg/L) total phosphorus.	2003 2007	Canyon County SCD, Conway Gulch, 141 BMPs; Dixie Slough, 75 BMPs.	Sediment, Bacteria, Temperature, Nutrients, Flow, DO, pH, BURP, Aquatic Biota
Indian Creek 4th order from Phyllis Canal to mouth.	002_04	LA in Lower Boise River TMDL (1999). Addendum (2008).	5.74 tons/day TSS; 129 cfu/100 ml (geomean) fecal coliform.	2003	City of Caldwell low impact development demonstration	Sediment, Bacteria, Nutrients, DO, pH, Flow, Temperature
Boise River 6th order, and tributaries to 6th order, from Glenwood Bridge to Mason Creek.	005_06	Lower Boise River TMDL (1999). Addendum (2008).	Target for TSS-50 mg/L for 60 days, 80 mg/L 14 days; 354 cfu/100 ml (geomean) fecal coliform.	2003		Sediment, Bacteria, Nutrients, DO, pH, Temperature, BURP, Flow
Mason Creek source to mouth.	006_02	LA in Lower Boise River TMDL (1999). Addendum (2008).	21.48 tons/day TSS; 50 cfu/100 ml (geomean) fecal coliform PCR; 200 cfu/100 ml (geomean) fecal coliform SCR.	2003		Sediment Bacteria, Nutrients, DO, pH, Temperature, BURP, Aquatic Biota

Stream Segment Description	Assessment Unit	TMDL	Load Allocation	Implementation Plan	Implementation Activities	Monitoring Data
Fifteenmile Creek, 4th order and tributaries to the 4th order.	007_04	LA in Lower Boise River TMDL (1999). Addendum (2008).	18.02 tons/day TSS; 50 cfu/100 ml (geomean) fecal coliform PCR; 200 cfu/100 ml (geomean) fecal coliform SCR.	2003	Ada County SWCD Fifteenmile Creek, 34 BMPs	Sediment, Bacteria, Nutrients, DO, pH, Flow
Boise River from Barber Dam to Glenwood Bridge.	011a_06	Lower Boise River TMDL (1999). Addendum (2008).	Target for TSS-50 mg/L for 60 days; 80 mg/L 14 days; 28 cfu/100 ml (geometric mean) fecal coliform.	2003	Downtown Boise gray water recycling demonstration; Barber Park Living Roof demonstration.	Sediment, Bacteria, Nutrients, DO, pH, Flow, Aquatic Biota
Boise River between Lucky Peak outfall and Diversion Dam.	011b_06	Lower Boise River TMDL (1999). Addendum (2008).	Target for TSS-50 mg/L for 60 days; 80 mg/L 14 days; 28 cfu/100 ml (geometric mean) fecal coliform.	2003		Sediment, Temperature, Flow, Aquatic Biota
Willow Creek, North Fork Willow Creek, and unnamed tributaries.	015_03	LA in Lower Boise River TMDL (1999). Addendum (2008).	2.28 tons/day TSS; 50 cfu/100 ml (geometric mean) fecal coliform.	2003		Sediment Bacteria, Nutrients, DO, pH, Temperature, BURP
Sand Hollow Creek	017_06	Snake River-Hells Canyon (2004).	Included in ungaged flows LA of 137 kg/day (<0.07 mg/L) total phosphorus.	2007		Sediment Bacteria, Nutrients, DO, pH, Temperature

Key Findings

The review process includes an evaluation of current data in accordance with the WBAGII (Grafe, et. al., 2002), to determine attainment status of beneficial uses for each AU. During the review process, some AUs were found to be impaired by one or more of the following: flow and habitat alteration, temperature, sediment, and bacteria. TMDLs are required for water bodies determined to be impaired by pollutants. However, impairments caused by non-pollutants, such as flow and habitat alteration, do not require a TMDL. Results of the review process for each AU are included in Table B and discussed in this section's Summary of Decisions. Determination of beneficial use support is based on evaluation of Beneficial Use Reconnaissance Program (BURP) surveys, water quality data collected by DEQ or third parties, and a review of other relevant information as discussed in Section 3.

Table B. Summary of assessment units, draft 2008 Integrated Report, existing TMDLs, and five-year review results.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
001_02	Unnamed 1st and 2nd order tributaries to Boise River between Indian Creek and the mouth.	Temperature	Riparian area 2 and 3 from the TMDL, including paleo oxbow lakes of the Boise River. Channels have been constructed to irrigate and drain cultivated fields; remnant wetlands and ponds remain.	Add to Section 3 as unassessed. Collect data to verify listed impairments. Add to Section 4c for flow and habitat alteration.
001_06	Boise River 6th order from Indian Creek to the mouth, and tributaries to the 6th order.	Temperature	Paleo meanders of the Boise River, modified by diversions and drains for agricultural uses. Diversions remove 76% of summer flow. Temperature and geomean bacteria data exceed criteria. Sediment data exceeds TMDL targets.	Add to Section 4c for flow and habitat alteration.
002_04	Indian Creek 4th order from Phyllis Canal to mouth.	Temperature, Bacteria	Data exceed TMDL targets for sediment and criteria for bacteria, and temperature. All other criteria are met. Confined channel and de-vegetated riparian zones in urban impact area.	Add to Section 5 for sediment. Schedule a TMDL for bacteria and temperature. Add to Section 4c for flow and habitat alteration.
003_02	North Indian Creek, 1st and 2nd order.	Sediment, Bacteria, Nutrients	Ephemeral or intermittent, channels with numerous dams.	Add to Section 3 as unassessed and collect data to determine use designation and status. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
003_03	Indian Creek 3rd order, upstream of Sand Creek.	Sediment, Temperature, Nutrients	BOR data indicates criteria and TMDL targets are met when flow is present. BURP data indicates dry streams for 2 out of 3 sampling events. Constructed flow controls, ephemeral and intermittent streams, many impoundments.	De-list for sediment, temperature, nutrients. Add to Section 4c for flow and habitat alteration.
003a_04	Indian Creek 4th order from Sand Creek to Phyllis Canal.	Sediment, Temperature, Unknown, DO	Data exceed criteria for temperature. All other criteria are met. Channelized, irrigation diversions, wastewater drains.	De-list for sediment, unknown and DO. Schedule a temperature TMDL. Add to Section 4c for flow and habitat alteration.
005_02	First and second order unnamed streams or tributaries to the Boise River from Glenwood Bridge to Mason Creek.		Secondary or abandoned channels and cut-off meanders of the mainstem Boise River, modified for agricultural uses (Miller canal) or urban development. Numerous diversions and drains, two large gravel mines.	Add to Section 3 as unassessed and Section 4c for flow and habitat alteration. Collect data to determine uses and water quality status.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
005_06	Boise River 6th order, and tributaries to 6th order, from Glenwood Bridge to Mason Creek.	Temperature	Data indicate temperature exceeds criteria; and bacteria exceeds criteria and TMDL targets. Confined channel, diversions, streamside rapid infiltration basins/impoundments, industrial activity, de-vegetated riparian zone, irrigation and industrial drains, urban development.	Add to Section 4c for flow and habitat alteration.
006_02	Mason Creek source to mouth.	Sediment, Unknown, DO, Nutrients	Data indicate sediment and bacteria exceed criteria and TMDL LAs. All other data is within criteria. Confined Channel, diversions, drains, de-vegetated riparian zone.	De-list for DO, nutrients and unknown. Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.
007_02	Fifteenmile Creek, 1st and 2nd order and tributaries.		Data for bacteria exceed criteria and sediment exceeds TMDL targets. Channel is constructed, or modified to appear constructed, for agricultural purposes.	Add to Section 5 for bacteria and sediment. Add to Section 4c for flow and habitat alteration.
007_04	Fifteenmile Creek, 4th order and tributaries to the 4th order.		Data indicate sediment and bacteria exceed criteria, and all other criteria are met. Channel is constructed, or modified to appear constructed, for agricultural purposes.	Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
008_02	1st and 2nd order tributaries to Tenmile Creek.		Ephemeral or intermittent channels, one spring and wetland. Several dams, 14 rapid infiltration basins near industrial sites, sand/gravel mines, isolated cultivated agricultural sites.	Add to Section 4c for flow and habitat alteration.
008_03	Third order Tenmile Creek.	Bacteria, Unknown, Nutrients	Data indicate sediment and bacteria exceed criteria, and all other criteria are met. Numerous dams and reservoirs, and riparian modification for agriculture.	De-list for unknown and nutrients. Add to Section 5 for sediment. Schedule a TMDL for bacteria. Add to Section 4c for flow and habitat alteration.
009_02	Blacks Creek 1st and 2nd order.	Habitat Alteration	Intermittent and ephemeral streams, dams and flow controls.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
009_03	Blacks Creek 3rd order.	Habitat Alteration	Intermittent flow, flow control structures. Removed from BOR's management plan because of poor storage potential and flow conditions. Reservoir is managed by IDFG.	Add to Section 3 as unassessed. Collect data to identify existing uses and water quality status. Add to Section 4c for flow alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
010_02	Fivemile Creek 1st and 2nd order.	Bacteria	No data to support listing for bacteria. Intermittent and ephemeral channels. Stream has been modified to support canal system, parts of channel completely obscured by ag/urban development.	Add to Section 3 as unassessed. Collect data to determine water quality status. Add to Section 4c for flow and habitat alteration.
010_03	Fivemile Creek 3rd order.	Unknown, DO, Nutrients, Habitat Alteration	Data indicate exceedance of sediment and bacteria criteria. Channelization for ag/urban development.	De-list for DO, nutrients and unknown. Add to Section 5 for sediment and bacteria. Add to Section 4c for flow alteration.
011a_02	1st and 2nd order tributaries to Boise River from Barber Dam to Glenwood Bridge.		Ephemeral or intermittent streams, a few small springs, dams and impoundments. Remnant rapid infiltration basins on banks of Boise River. Streams are not tributaries to the river.	Add to Section 4c for flow and habitat alteration.
011a_06	Boise River from Barber Dam to Glenwood Bridge.	Temperature	Temperature criteria for salmonid spawning are exceeded every spring and most fall months. Criteria for pH, sediment, bacteria, DO, and ammonia are met. Flow control structures and diversions, near-stream impoundments, removal of riparian vegetation, wastewater drains. Includes Riparian area 1 from the TMDL.	Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
011b_02	1st and 2nd order streams and tributaries near outfall of Lucky Peak Dam.		Dams and impoundments in the headwaters and near the valley floor. The only tributary to the river is at the base of the dam and may flow in response to that structure.	Add to Section 4c for flow and habitat alteration.
011b_06	Boise River between Lucky Peak outfall and Diversion Dam.	Flow Alteration	Data indicate that criteria area met for temperature, pH and DO. Flow control structures, diversions and urban development have modified habitat.	Add to Section 4c for habitat alteration.
012_02	Stewart Gulch, Cottonwood and Crane Creeks, 1st and 2nd order.	Habitat Alteration	Cottonwood Creek is intermittent, based on USGS recent flow records for AU 012_03. Springs are developed and impounded, or diverted from natural channels. Flood control structures—sediment and overflow basins-- dating from the early 1900's prevent mass wasting and reduce sediment loads to the river.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
012_03	Stewart Gulch, Cottonwood and Crane Creeks, 3rd order to mouth.	Habitat Alteration	Streams are modified with flood control structures and diversions. Flow is directed through pipes and flumes to the Boise River.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
013_02	1st and 2nd order Dry Creek and tributaries.		Flow control structures and reservoirs in tributaries to Currant Creek.	Add to Section 4c for flow alteration.
013_03	3rd order Dry Creek and tributaries.		Data indicate that all criteria are met. Flow control structures and channel modification to accommodate agriculture and urban development.	Add to Section 2 as supporting presumed uses.
013_04	4th order Dry Creek.		Flow control structures, channel modification, ag/urban development, gravel mine, and numerous impoundments.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
014_02	Big/Little Gulch Creek Complex		Flow control structures and channel modifications to accommodate agriculture.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
015_02	South Fork Willow Creek.	Habitat Alteration, Temperature	Ephemeral or intermittent streams. Flow control structures and impoundments.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
015_03	Willow Creek, North Fork Willow Creek, and unnamed tributaries.	Temperature, Habitat Alteration	Data indicate bacteria exceeds criteria and TMDL targets, and all other criteria are met. Channelized for ag/urban development, dewatered stream segments.	De-list for temperature. Add to Section 5 for bacteria. Add to Section 4c for flow alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
016_02	Langley/ Graveyard Gulch complex		Appears to drain to the Payette River subbasin. Flow control structures and channel modification to accommodate agriculture.	Initiate review to determine possibility that landforms drain to HUC 17050122. Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
016_03	Langley/ Graveyard Gulch complex	Sediment, Unknown, Nutrients, DO	Most streams are ephemeral, 3 or 4 springs, no defined natural stream channels. No data to support listing. Constructed and modified channels to accommodate agriculture.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
017_02	1st and 2nd order Sand Hollow Creek and tributaries.		Data indicate all criteria are met. Constructed and modified channels to accommodate agriculture.	 Add to Section 4c for flow and habitat alteration.
017_03	Sand Hollow Creek 3rd order and tributaries	Sediment, Unknown, DO	Data indicate sediment exceeds TMDL targets. All other criteria are met. All streams are modified to facilitate agriculture.	De-list for DO and unknown. Schedule a sediment TMDL. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
017_06	Sand Hollow Creek	Sediment, Nutrients, DO, Unknown	Data indicate that bacteria exceed criteria and sediment exceeds TMDL targets and criteria. Channelized, flow control structures, impoundments, diversions, and irrigation drains.	Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.

Summary of Recommendations

Because the draft 2008 Integrated Report was not approved before development of this review, the final 2008 Integrated Report may not reflect recommendations made in this report. All recommendations for the next Integrated Report refer to the 2010 Integrated Report. The following paragraphs are brief explanations of the recommendations summarized in Table B. Because all of the AUs discussed in this review are in the Lower Boise River subbasin, (HUC 17050114) the AUs will be referred to by the numerical suffix assigned to each AU in Idaho's WQS. For example, the AU identified in Idaho WQS as ID17050114SW001_02 is abbreviated to 001_02. The following paragraphs are brief explanations of the beneficial use attainment status of each AU and the rationale used in offering recommendations for the next integrated report. Designated beneficial, existing, and presumed uses; WQS; and criteria for each AU are defined and summarized in Section 3 of this document. Some AUs received LAs in the TMDL because it was determined that the AU may be contributing, in a cumulative manner, to impairment of the stream segment of concern to the TMDL. An LA is not equivalent to a listing of impairment.

001_02

This AU includes 2 unnamed 1st order tributaries to the Boise River between Indian Creek and the mouth (including Riparian Area 2 and 3 of the TMDL) and is in Section 5 of the draft 2008 303(d) list for temperature. Beneficial uses are not designated and are presumed to meet cold water aquatic life (COLD) and primary and secondary contact recreation (PCR/SCR) uses. A review of satellite photo images from 2006 indicate that this AU is primarily remnant channels and oxbows of the Boise River that have been modified to irrigate and drain agricultural lands surrounding a large wetland. No temperature data is available to verify the listing in the draft 2008 Integrated Report.

This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat alteration. Data should be collected to determine appropriate use designation and water quality status.

001_06

This AU includes the Boise River 6th order segment from Indian Creek to the mouth and unnamed tributaries to the 6th order segment. The designated uses for this AU are COLD and PCR and it is listed in the draft 2008 Integrated Report for temperature and has approved TMDLs for sediment and bacteria (DEQ, 1999). There are four control monitoring locations for the TMDL in this AU. Data has been collected from three of these locations in the past five years. The WQS for PCR have changed since the TMDLs were developed to an *E. coli*-based standard for bacteria.

Water District 63 controls flows through diversions and drains. Diversions total 1,600 cfs (76%) in an average July and drains are not monitored. Numerous canals and drains have been constructed and urbanization has resulted in modified channels throughout the AU.

The U.S. Geological Survey (USGS) and the City of Boise have collected water quality data over the past five years that indicate the temperature of the Boise River in this AU exceeds criteria and geomean bacteria results exceed criteria. Two drains have been monitored for water quality: Dixie Drain and Conway Gulch. Data from these drains indicate temperature, sediment, and instantaneous bacteria criteria are exceeded; and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Conway Gulch contributes more sediment and phosphorus than Dixie Drain and Dixie Drain contributes more bacteria than Conway Gulch. Sediment and bacteria LA targets established in the TMDL (DEQ, 1999) have not been achieved in this AU.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

002_04

This AU includes Indian Creek 4th order from Phyllis Canal to the mouth, Caldwell Highline Canal and Notus Canal. The designated uses are COLD and SCR and the AU is listed as impaired by temperature and bacteria in the draft 2008 Integrated Report. There is one control monitoring location in this AU for the TMDL and an LA for bacteria and sediment at the confluence with the Boise River. The WQS for SCR have changed since the TMDLs were developed, to an *E. coli*-based standard for bacteria.

The stream has been straightened and confined and the riparian zone has been de-vegetated through the urban area. Agricultural drains and industrial and municipal effluent contribute to streamflow in this AU.

The USGS and the Idaho State Department of Agriculture (ISDA) have collected water quality data from the control monitoring location over the past five years and reported results indicate that instantaneous bacteria and sediment criteria and TMDL targets are exceeded in this AU. There are also sediment plumes from the confluence into the Boise River visible in satellite images. Phosphorus data indicate that concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Dissolved oxygen (DO) and pH are within criteria.

The city of Nampa collected data above and below the WWTP from 2003 through 2007 in compliance with permit requirements. The data indicate that sediment, DO and pH are within criteria at the WWTP. Temperature criteria is exceeded in summer and fall months upstream of the WWTP. Because the temperature data collected by the USGS in 2005 was always collected in the morning and there are only 5 data points in that dataset, the data from the City of Nampa was more useful in making a determination for temperature in this AU.

This AU should be listed in Section 5 for sediment, listed in Section 4c for flow and habitat alteration and a TMDL for bacteria and temperature should be scheduled.

003_02

This AU includes North Indian Creek and 1st and 2nd order streams and tributaries. Slater Creek, Cow Creek, Sheep Creek, Ridenbaugh Canal, North Indian Creek, West Fork Slater Creek, Sand Creek and East Fork Slater Creek are in this AU. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. The AU is listed in the 2008 draft Integrated Report for sediment, bacteria and nutrients.

There is no evidence of anything more than ephemeral flow east of Pleasant Valley Road, in Ada County. Some evidence of intermittent flow is present between Pleasant Valley Road and South Cole Road, in Ada County. There are three flow control structures in Caldwell Draw and one in Slater Creek. East of South Cole Road, North Indian Creek is impounded, with no observed flow below the dam. There is no evidence of flow in the channel west of the impoundment until Cloverdale Road, where another large impoundment has been constructed in the stream channel just south of Kuna-Mora Road, on the east side of Cloverdale Road. North of Kuna-Mora Road the channel of North Indian Creek has been obliterated by cultivated fields, and meander scars are still visible in satellite images. Several impoundments have been constructed throughout the AU, and very little water is visible in the basins.

Water quality data is not available for this AU and attempts to collect BURP data in 2007 failed due to dry stream conditions. Based on a review of available data, it is recommended that this AU be scheduled for a thorough assessment of existing conditions to determine correct designation of beneficial uses and water quality status. This AU should be listed in Section 3 as unassessed and Section 4c for flow and habitat alteration in the next Integrated Report.

003_03

This AU includes the 3rd order of Indian Creek, upstream of Sand Creek (including Indian Creek Reservoir), 3rd order of North Indian Creek, Sand Creek and unnamed tributaries. Indian Creek Reservoir was constructed before the existence of federal land management agencies and is managed by the Idaho Department of Fish and Game (IDFG) as a warm water fishery. The designated uses of this AU are COLD and SCR and it is listed in the draft 2008 Integrated Report for sediment, temperature and nutrients. Some unnamed streams, and possibly a portion of Indian and North Indian Creek, may be intermittent.

In addition to numerous small impoundments on Indian Creek, there are three dams and two impoundments in Caldwell Draw (between Sheep and Indian Creeks) and one in Sheep Creek that appear to capture all available surface water. The IDFG frequently promotes salvage fishing from Indian Creek Reservoir in dry years and waits until a relatively wet year to restock the reservoir. The reservoir was classified by the IDFG as “dry” from 2001 through 2006.

In 1999, the Bureau of Reclamation (BOR) collected water quality data from the inlet of the reservoir and from Indian Creek above the confluence with the New York Canal. BOR data indicate that criteria and TMDL targets for the Lower Boise TMDL are met at the sample

locations when flow is present. While the data is too old to be used for use determination in accordance with WBAG II (Grafe, et al., 2002), it can be used as Tier II data.

It is recommended that this AU be de-listed for sediment, temperature and nutrients, assessed for use modification to MOD (not yet approved by EPA) and SCR and listed in Section 4c of the next Integrated Report for flow alteration.

003a_04

This AU includes Indian Creek 4th order from Sand Creek to Phyllis Canal and tributaries to the 4th order segment. The designated uses of this AU are COLD, salmonid spawning (SS) and SCR, and it is listed in the draft 2008 Integrated Report for sediment, temperature, DO and unknown. Sand and North Indian Creeks and unnamed tributaries appear to be ephemeral streams. Some unnamed streams, and possibly a portion of North Indian Creek, may be intermittent. There is a dam and a reservoir at the confluence of Sand and Indian Creeks and numerous channel modifications and impoundments in Indian Creek downstream of Sand Creek.

DEQ collected BURP data (including fish and macroinvertebrate data) from this AU in 2003 that resulted in a low score and a determination that aquatic life beneficial uses are not supported in this AU (BURP Site ID 2003SBOIA051). DEQ also collected data in 2008 which indicate that water temperature in the spring exceeds criteria and one *E. coli* sample exceeded the single sample criteria, but no geomean data has been collected. All other data are within criteria.

This AU should be de-listed for sediment, DO and unknown; scheduled for a temperature TMDL and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

005_02

This AU includes the 1st and 2nd order unnamed streams or tributaries to the Boise River from Glenwood Bridge to Mason Creek, and the Miller canal. The beneficial uses are not designated and are presumed to support COLD and SCR/PCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. There is no water quality data for this AU and a review of satellite images indicates that these streams are secondary or abandoned channels and cut-off meanders of the mainstem Boise River that have been modified for agricultural uses or urban development. There are numerous diversions and drains and two large gravel mines in this AU and the land uses are cultivated agriculture, industrial and suburban.

This AU should be added to Section 3 as unassessed, listed in Section 4c of the next Integrated Report for flow and habitat alteration and should be assessed to determine appropriate beneficial use designation and water quality status.

005_06

This AU includes Boise River 6th order, from Glenwood Bridge to Mason Creek and unnamed tributaries to the 6th order mainstem river, including the Phyllis Canal. The designated uses of this AU are COLD, SS and PCR and it is listed in the draft 2008

Integrated Report as impaired by temperature. The mainstem river in this AU has approved TMDLs for sediment and bacteria. There are 10 TMDL control monitoring locations in this AU and data has been collected from five of these in the past five years. Discharge (flow volume), suspended sediment and bacteria data have been collected from two control monitoring locations by the USGS and ISDA between 2003 and 2008. The implementation plan specified plans for geomean bacteria data to be collected at control monitoring locations to determine compliance with the TMDL and geomean data was collected by the city of Boise in 2005. In addition to the constituents monitored for existing TMDLs, the city of Boise has collected continuous temperature data from the Boise River control monitoring location from 2003 to 2008.

The perennial streams in this AU have been modified to facilitate agricultural activities with numerous diversions and drains and urban development has encroached into the floodplain of the mainstem river and has fostered devegetation of riparian zones along deepened and channelized streams. Between Glenwood Bridge and Parma, 76 to 89% of the flow is diverted every irrigation season, with an estimated 50% of that flow returning to the mainstem river between Star and Caldwell (BOR, 2008).

Results of data collection reported by the USGS and the City of Boise indicate that geomean bacteria criteria are exceeded in the Boise River above Middleton and near Caldwell. Single-sample (instantaneous) bacteria criteria are exceeded in Mill Slough, but no geomean samples have been collected. Temperature data reported by all data collection agencies indicate that temperature criteria for SS are exceeded in the mainstem Boise River above Middleton every spring, and some years in the fall months. This pattern is evident from data collected at Mill Slough also.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

006_02

This AU includes Mason Creek from source to mouth, including Kuna Canal, New York Canal, Mason Slough and Mason Creek Feeder. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report for sediment, unknown and DO. This AU has LAs and two control monitoring locations for sediment and bacteria in the TMDL, at the confluence with the Boise River. The stream channel is visibly confined with numerous diversions and drains and the riparian zone has been de-vegetated to allow for urban development.

The USGS and ISDA have collected data from one TMDL control location between 2003 and 2008 and DEQ collected BURP data from this AU in 2003 (BURP Site ID 2003SBOIA050). Based on the sample results reported by the data collection agencies, sediment and bacteria exceed criteria and TMDL targets. Reported values of DO and temperature are within criteria. The BURP scores, which include fish and macroinvertebrate data, were low and resulted in a determination that aquatic life and recreation beneficial uses are not supported in this AU.

In the next Integrated Report, this AU should be de-listed for DO and nutrients, listed in Section 5 for bacteria and sediment and listed in Section 4c for flow and habitat alteration.

007_02

This AU includes the first and second order unnamed streams in the Fifteenmile Creek watershed. Beneficial uses are not designated and are presumed to meet COLD and SCR/PCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. This AU begins at the confluence of Tenmile and Fivemile Creeks, near the intersection of Linder and Franklin roads in Ada County and parallels the Highline Canal. The ISDA collected water quality data from this AU in 2008 and Tenmile and Fivemile Creeks are listed in the draft 2008 Integrated Report as impaired for bacteria and nutrients. This stream is a constructed channel or has been modified by agriculture and urban activities so that it appears to be entirely constructed.

Results of data collected by the ISDA indicate that single-sample (instantaneous) bacteria criteria are exceeded more than 50% of the time, but no geomean samples have been collected. Results of suspended sediment analyses indicate that short-term and long-term TMDL targets are exceeded in this AU and criteria appear to be exceeded. Phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria appear to be met.

Based on the information reviewed for this report, this AU should be listed in Section 5 for sediment and bacteria and Section 4c of the next Integrated Report for flow and habitat alteration. This AU should also be assessed for appropriate designation of uses.

007_04

This AU includes the 4th order of Fifteenmile Creek and unnamed tributaries. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report as unassessed. LAs for sediment and bacteria were assigned to one location in this AU with one control monitoring location. Water quality data is available for this AU and Tenmile and Fivemile Creeks (headwater source) are listed in the draft 2008 Integrated Report as impaired for bacteria and nutrients.

This stream is a constructed channel or has been modified by agriculture and urban activities so that it appears to be entirely constructed. There are at least four diversions and numerous drains in this AU, which are used for agricultural purposes. Water quality data collected by the USGS in the summer of 2005 indicate that bacteria concentrations exceed the single-sample criteria, but geomean data has not been collected. All samples collected exceed the TMDL 60-day maximum target for suspended sediment, and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other reported values (temperature, pH and DO) are within standards.

Based on information reviewed for this report, this AU should be listed in Section 5 for bacteria and sediment, and in Section 4c for flow and habitat alteration, in the next Integrated Report.

008_02

This AU includes 1st and 2nd order streams in the Tenmile Creek watershed. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report as unassessed. There is no water quality data for this AU but a review of satellite images indicates that most of the streams are ephemeral or intermittent, with the exception of one spring and wetland. There are several dams that appear to have dry or nearly dry impoundments, 14 rapid infiltration basins near industrial sites and at least nine sand/gravel mines. There are a few isolated cultivated agricultural sites.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration and data should be collected to determine the appropriate beneficial use designation and water quality status.

008_03

This AU includes the third order of Tenmile Creek, downstream of Blacks Creek Reservoir. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report for bacteria, nutrients and unknown. LAs for sediment and bacteria at the mouth of Tenmile Creek were established in the TMDL. There are numerous dams and impoundments and the riparian zone has been modified for agricultural uses.

Data has been collected by the USGS four times between 2003 and 2008. Based on reported results, Tenmile Creek exceeds single-sample bacteria criteria and TMDL targets for sediment. Data to calculate bacteria geomean values has not been collected. Phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. No other impairments are documented.

It is recommended that this AU be de-listed for unknown and nutrients, listed in Section 5 for sediment and in Section 4c of the next Integrated Report for flow and habitat alteration. A bacteria TMDL should be scheduled.

009_02

This AU includes Blacks Creek 1st and 2nd order streams to the reservoir, Bryans Run and unnamed tributaries, and is listed in the draft 2008 Integrated Report for habitat alteration. Beneficial uses are not designated and the AU is presumed to meet COLD and PCR/SCR uses. A review of satellite images indicates that most of this AU is intermittent or ephemeral, with three pools in the main channel of Blacks Creek, but no flowing water. Bryans Run contains two constructed flow control features and three unnamed tributaries have

constructed impoundments, but no free-flowing water. Water quality data has not been collected from this AU in the past five years, and BURP samples from 1996 (1996SBOIA055) and 1998 (1998SBOIA006) indicate that dry stream conditions dominate this AU in the spring and summer months.

This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report. Data should be collected to determine appropriate beneficial use designation and water quality status.

009_03

This AU includes Blacks Creek 3rd order, which encompasses Blacks Creek Reservoir to the headwaters of Tenmile Creek. The AU is not designated and is presumed to meet beneficial uses of COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report for habitat alteration. There are three dams and impoundments in this AU and flow appears to be ephemeral in most years and intermittent in years with above average precipitation. Blacks Creek Reservoir is fed by ground water and is owned by the Bureau of Land Management (BLM) and private parties and managed by IDFG.

The IDFG has designated the area as an important bird area (IBA) and is working with the BLM Four Rivers Field Office and the Land Trust of Treasure Valley to recover and restore the ecology of the watershed. The watershed has been damaged by unregulated recreation use, which has resulted in refuse dumping, avian poaching, destructive off-road vehicle use, over-grazing, housing developments and invasive weeds.

Water quality data has not been collected from this AU in the past five years and BURP data collected in 1998 (1998SBOIB005) reports conditions common to intermittent waters. Data should be collected to determine appropriate beneficial use designation and water quality status. This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report.

010_02

This AU includes 1st and 2nd order Fivemile Creek, Eightmile Creek and unnamed tributaries and is intersected by Interstate 84 southeast of the city of Boise. Beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for bacteria.

Water quality data has not been collected from this AU since BURP surveys documented dry stream conditions in 1998 (1998SBOIB007). Satellite images indicate that except for one or two small springs, the streams are ephemeral and may flow intermittently to West Gowen Road, where Fivemile Creek intersects the New York Canal. West of the New York Canal, the stream channel flows during the irrigation season through a mix of urban and suburban private land parcels. The stream has been straightened and deepened to support the intricate subbasin canal system. There is no riparian vegetation in this AU and it is uncertain what the natural channel morphology may have been, absent the extensive modifications now present.

Agriculture and urban development of the cities of Boise and Meridian have almost completely obscured the natural stream channels throughout the remainder of the AU, which ends near the intersection of Overland and S. Eagle roads in Ada County.

Data should be collected from this AU to determine appropriate use designation and water quality status. This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report.

010_03

This AU includes the 3rd order of Fivemile Creek, which is a brief stream segment from the confluence of Eightmile Creek to the confluence with Fifteenmile Creek. The designated beneficial uses of this AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for habitat alteration, DO and unknown pollutants. LAs for sediment and bacteria at the mouth of Fivemile Creek were established in the TMDL, but this stream was not listed as impaired when the TMDL was developed.

DEQ collected BURP data in 2003 (2003SBOIA052) that resulted in a low score and a determination of non-support of beneficial uses. The stream was dry when BURP sampling was attempted in 2005 (2005SBOIP009) and 1996 (1996SBOIA042). The USGS collected water quality data in the summer of 2005 that indicate that Fivemile Creek exceeds single-sample bacteria criteria and TMDL targets for sediment. Geomean bacteria data has not been collected. Reported results of phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Data collected over the same time period indicate that Fivemile Creek does not exceed criteria for temperature, DO, or pH. The same alterations to the channel and riparian habitat that were discussed for AU 010_02 are evident in this AU.

This AU should be de-listed for DO and unknown pollutants and listed in Section 5 for sediment and bacteria, and Section 4c for flow and habitat modification in the next Integrated Report.

011a_02

This AU includes Squaw Creek, Warm Springs Creek, Maynard Gulch and unnamed 1st and 2nd order streams north of the Boise River near Barber, Idaho. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU and satellite images indicate that except for a few small springs, the streams are ephemeral or intermittent. In drainages that appear to experience some surface water flow, there are three dams and impoundments near the valley floor. These structures function as flood control structures to prevent mass wasting in the foothills from delivering excessive sediment to the Boise River. There are remnant rapid infiltration basins on the banks of the Boise River.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration and data should be collected to determine the appropriate designated beneficial uses and water quality status.

011a_06

This AU includes the Boise River from Barber Dam to Glenwood Bridge, including Phyllis Canal and Riparian Area 1 in the TMDL. The designated beneficial uses of this AU are COLD, SS, PCR, domestic water supply (DWS) and special resources water (SRW), and it is listed in the draft 2008 Integrated Report for temperature. The TMDL established WLAs for sediment and bacteria at each point source, and LAs for bacteria at the control monitoring location at Glenwood Bridge (USGS site 13206000).

The USGS collected instantaneous discharge data at three locations from 2003 through 2008, and during the same time period the city of Boise collected continuous water temperature and geomean bacteria data from three locations: Boise River at Glenwood Bridge, Boise River at Marden Bridge and Boise River at Veterans Parkway. Data collected at Glenwood Bridge indicate that sediment and bacteria targets were not exceeded between 2003 and 2008. Fish data from 2003 indicates that SS is an existing use in this AU.

Temperature data indicate that criteria for SS are exceeded most years from May through July and again in October and November at all three locations monitored by the city of Boise. Instantaneous temperature data collected by the USGS indicate that criteria exceedance is an issue from May through July. The USGS collected benthic macroinvertebrate data at the control monitoring location, but not during the time of year that can be used to determine use attainment status. DO and ammonia concentrations were within criteria for all samples and the pH criterion was exceeded once between 2003 and 2008. Phosphorus data from this AU may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River.

Flow and habitat in this AU have been modified by dams, reservoirs, diversions, urban encroachment in the riparian zone and point and nonpoint source effluent. Water District 63 is responsible for managing diversions in the Boise River and in most years, 76 to 85% of the flow between Barber Dam and Glenwood Bridge is diverted from the mainstem (BOR, 2008).

The TMDL targets for sediment and bacteria appear to be achieved in this AU. This AU should be listed in Section 4c for habitat and flow alteration in the next Integrated Report.

011b_02

This AU includes 1st order unnamed tributaries to the Boise River below Lucky Peak Dam outfall. The beneficial uses for this AU are not designated and are presumed to support COLD and PCR/SCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU and satellite images indicate that except for a few small springs, the streams are ephemeral or intermittent. In

drainages that appear to experience some surface water flow, there are dams and impoundments in the headwaters and near the valley floor. The only tributary to the river is at the base of Lucky Peak Dam and may flow in response to that structure.

Data should be collected from this AU to determine appropriate use designation and water quality status. This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

011b_06

This AU includes the Boise River between Lucky Peak Dam outfall and Diversion Dam and the tributaries to this segment of the mainstem river. The designated beneficial uses for this AU are COLD, PCR, DWS, and SRW and it is listed in the draft 2008 Integrated Report as unassessed and impaired by flow alteration. Flows are controlled by the Army Corps of Engineers (ACOE) in accordance with contracts negotiated by the Bureau of Reclamation.

Water quality data has been collected by the USGS from one location between 2003 and 2008. The TMDL targets for sediment and bacteria appear to be met, based on data collected from the Boise River at Diversion Dam. The city of Boise collected continuous temperature data from below the Lucky Peak Dam outfall and the USGS collected flow data from the same location and instantaneous water temperature from the Boise River near Diversion Dam. The data indicate that temperature, DO, and pH criteria are met in this AU. Ammonia, phosphorus and aquatic life data have not been collected.

It is recommended this AU be de-listed for temperature and be listed in Section 4c of the next Integrated Report for habitat alteration.

012_02

This AU includes 1st and 2nd order streams (Stewart Gulch, Hulls Gulch; Fivemile, Picket Pin, Freestone, Crane, Warm Springs and Cottonwood Creeks) on the north side of the Boise River between AU 011b_02 and the Glenwood Bridge. This AU does not have designated uses and is presumed to meet the beneficial uses of COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report for habitat alteration. Water quality data has not been collected from the AU since 1996, when BURP data was collected from Cottonwood Creek (BURP Site IDs 1996SBOIA015 and 1996SBOIB033).

Water flow was so low (0.4 cfs) during the BURP surveys that data collection was annotated as incomplete. A survey of satellite images of the watershed indicates that most of the streams in this AU are intermittent, and there are a few springs and a couple of gravel/sand mines. Several watersheds have been developed for golf courses and subdivisions and all drainages have been either truncated or straightened and diverted south of Hill Road in the city of Boise.

The city of Boise has installed several flood management structures in Cottonwood Creek, Hulls Gulch, Crane Creek and Stewart Gulch to prevent mass wasting, control flooding and

reduce sediment loads into the Boise River. There are sediment and overflow basins in the foothills and pipes and flumes in the floodplain that route streamflow to the river. These structures date to the early 1900s through the 1990s and are maintained by the city on a regular basis (personal communication with J. Wiley, city of Boise, 2008).

Data should be collected from this AU to determine appropriate beneficial use designation and water quality status. This AU should be listed in Section 3 as unassessed and in Section 4c for flow alteration of the next Integrated Report.

012_03

This AU includes 3rd order Cottonwood Creek (from Fivemile Creek to the mouth), tributaries to Cottonwood Creek, Farmers Union Canal and tributaries to the Boise River in the Cottonwood Creek watershed. Beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration.

Most of the streams in this watershed have been modified with flood control structures as described for AU 012_02 and flow through impoundments and pipes between the foothills and the river. BURP data was last collected in 1996 by DEQ (BURP Site ID 1996SBOIA014) and flow data has been collected by the USGS from 2002 to 2008. Flow data, and information from the city of Boise Public Works Department (J. Wiley, personal communication, 2008) confirms that Cottonwood Creek is intermittent, with flow occurring November through May in most years.

This AU should be assessed in accordance with the WBAG II (Grafe, et. al., 2002) to determine appropriate use designation and water quality status. This AU should be listed in Section 3 as unassessed and in Section 4c for flow alteration in the next Integrated Report.

013_02

This AU includes 1st and 2nd order Dry Creek and tributaries. Shingle Creek, Currant Creek, Spring Valley Creek, Custer Creek, North Fork Daniels Creek, McFarland Creek, South Fork Daniels and Daniels Creek. Beneficial uses are not designated and presumed uses are COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU, but a survey of satellite images indicate that there are at least 12 dams and reservoirs/impoundments (most of them in Currant Creek) and the land use around most of the observable springs is residential.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

013_03

This AU includes Dry Creek 3rd order and tributaries, from Daniel Creek to the confluence with Spring Valley Creek, including Currant Creek and Spring Valley Creek. The beneficial

uses are not designated and are presumed to be COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Based on a review of satellite images, most of the streams in this AU appear to be intermittent. Dry Creek and Spring Valley Creek appear to be perennial streams with irrigated cultivated fields filling the floodplain of both streams. The perennial streams appear to be confined and may have been deepened to facilitate agricultural land uses. The ISDA collected data this year (2008) and data indicate that the presumed beneficial uses are met.

This AU should be added to Section 2, as supporting presumed uses, in the next Integrated Report.

013_04

This AU includes Dry Creek 4th order, and tributaries, from Spring Valley Creek to the confluence with the Boise River. The beneficial uses are not designated and are presumed to be COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed.

The watershed is sparsely populated, but almost all of the agriculture that requires irrigation occurs on the banks of the streams. A large gravel mine and numerous impoundments exist in the watershed. Close to the confluence with the Boise River. The city of Eagle has expanded and suburban neighborhoods almost fill the southeast half of the watershed with numerous canals and laterals transecting the perennial streams at several locations. Streams in the AU have been channelized to facilitate urban, agricultural, and industrial development.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for habitat and flow alteration in the next Integrated Report.

014-02

This AU includes Big Gulch and Little Gulch Creeks, a complex of intermittent streams, and is listed in the draft 2008 Integrated Report as unassessed. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. Water quality data has not been collected from this AU and a review of satellite images indicate that the streams are ephemeral or intermittent and have been modified by flow control structures. Big Gulch Creek and Woods Gulch each have two dams and reservoirs and one dam is in Little Gulch Creek.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

015_02

This AU includes 1st and 2nd order Willow Creek and tributaries. This includes Alkali, Schiller, North and South Fork Willow and Willow Creeks and Middleton Mill Ditch. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration and temperature impairment. The streams in the AU appear to have ephemeral, hyporheic, or intermittent flow patterns and there is a history of frequent wildland fires.

The ISDA has collected water quality data from this AU and BURP data was collected by DEQ in 1996 (1996SBOIA084), 2004 (2004SBOIAA004) and 2005 (2005SBOIA012). Attempts to conduct BURP surveys failed in 1996 because the stream channel was dry, failed in 2004 because access was denied by the landowner (who claimed the stream is always dry) and failed in 2005 because no streambed was visible and urban development was occurring at the sample location. Data collected by the ISDA is too old to be used to determine use attainment status, but indicates that the mainstem of Willow Creek in this AU is usually dry.

North and South Fork Willow and Schiller Creeks have been modified by flow control structures and visibly straightened near cultivated fields. Three dams and impoundments are in the North Fork Willow Creek, two in Schiller Creek, and one in South Fork Willow Creek.

This AU should be assessed to determine appropriate beneficial use designation and water quality status, listed in Section 3 as unassessed and listed in Section 4c for flow alteration in the next Integrated Report.

015_03

This AU includes the 3rd order of Willow Creek, North Fork Willow Creek and tributaries. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration and temperature. This AU was assigned LAs for sediment and bacteria in the Lower Boise River TMDL and has one control monitoring location.

A spring complex west of the junction of Pearl and Chaparral roads is visible from satellite images and the mainstem of Willow Creek has been relocated, straightened, and constricted west of the natural channel to accommodate cultivated agriculture. Riparian vegetation density increases and a braided channel reforms downstream of the irrigated fields and springs. Near Highway 16, the mainstem of Willow Creek has been straightened, confined, and possibly deepened to allow for agriculture and low-density suburban development. The stream channel appears to be dry in most places upstream of the intersection with the C-Line Canal, west of Blessinger Lane in Canyon County. Downstream of the canal, the stream channel appears to be one-third the width of the canal and riparian vegetation density varies from substantial to absent through the city of Middleton to the confluence with the Boise River, near Wiffin Lane.

BURP data was collected in 1996 (1996SBOIA083, 1996SBOIA083) which resulted in documentation of a dry stream at the first site and a failing score at the second site. ISDA

collected water quality data from this AU in 2008 and the USGS collected data in the summer of 2005 at the LA control monitoring location. Reported sample results indicate that this AU exceeds sediment targets and instantaneous bacteria criteria (geomean data has not been collected), and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria are met.

This AU should be de-listed for temperature and listed in Section 5 for bacteria, and Section 4c of the next Integrated Report for flow alteration.

016_02

This AU includes the Langley/ Graveyard Gulch complex, including the C-Line Canal West, and is listed in the 2008 draft Integrated Report as unassessed. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. Most of the AU is in Gem County and the primary water bodies are constructed canals delivering water from the Payette River to this portion of the Lower Boise River subbasin.

Water quality data has not been collected from this AU and a review of satellite images indicate that most natural stream channels in the AU are ephemeral in nature and most of the topography is actively cultivated. Features that resemble springs are evident in satellite images, but may be seeps from the canal system. This AU may actually contribute to the drainage area of the Payette River subbasin (17050122).

Data should be collected to determine appropriate beneficial use designation and water quality status and this AU should be reviewed to determine correct HUC designation and listed in Section 4c of the next Integrated Report for flow and habitat alteration.

016_03

This AU includes Langley and Graveyard Gulch, ephemeral streams, and several springs north of the Sand Hollow Creek watershed (AU 017). The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for sediment, nutrients, DO and unknown pollutants.

All visible natural drainages are either cultivated or channeled and diverted to support cultivation. Most springs have been developed and impounded and are not connected to other surface water bodies. Numerous constructed channels deliver water from the Payette River to irrigated crops and drain used water into AU 017. Water quality data has not been collected from this AU.

Data should be collected to determine appropriate use designation and water quality status and this AU should be added to Section 3 as unassessed and listed in Section 4c of the next Integrated Report for flow and habitat alteration.

017_02

This AU includes 1st and 2nd order streams in the Sand Hollow Creek watershed. This includes the D-Line Canal, Notus Canal and Farmers Cooperative Sebree Canal. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. It was not included in the TMDL and does not have LAs or targets for any pollutants. The largest water bodies are constructed canals and drains. Some natural channel remnant features are visible on satellite images, but most have been obliterated by cultivation and the ones that remain have been modified to facilitate agricultural practices.

DEQ collected BURP data in 1996 (1996SBOIA081) and water quality data in 2008. Reported results indicate DO, bacteria, sediment, and temperature are within criteria. It is recommended that this AU be listed in Section 4c flow and habitat alteration.

017_03

This AU includes Sand Hollow Creek 3rd order, from the intersection of Farmway and Oasis roads in Canyon County to the intersection with Parma Drain, near Sharp Lane, in Canyon County. The designated uses of the AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for sediment, bacteria, DO, and unknown pollutants. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. It was not included in the TMDL and does not have LAs or targets for any pollutants.

The channel has been modified to support agricultural canals, laterals, and drains, and the natural channel morphology is almost impossible to identify. There are approximately 6 flow control structures and at least 35 drains delivering agricultural effluent into Sand Hollow Creek in this AU. Upstream of Hwy 20/26, natural meanders are absent, with sinuosity and uncontrolled flow gradually reestablished downstream of Highway 20/26.

DEQ is collecting water quality data in this AU this year (2008). Data indicate that one single-sample bacteria analysis exceeded criteria. Geomean bacteria data has not been collected and DO, pH, and temperature meet criteria. Sediment concentrations exceed TMDL targets and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River.

It is recommended that this AU be de-listed for DO and unknown, scheduled for development of a sediment TMDL, and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

017_06

This AU includes 6th order Sand Hollow Creek from the intersection with Parma Drain to the boundary of the HUC. The designated uses of the AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for sediment, nutrients,

DO, and unknown pollutants. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. This AU has TMDL LAs for total phosphorus in the Snake River-Hells Canyon TMDL (IDEQ, ODEQ, 2004).

The channel has been straightened and confined to support agricultural land uses and there are at least two flow control structures and three drains delivering agricultural effluent into Sand Hollow Creek in this AU. Some natural sinuosity is preserved and the presence of water in abandoned channels, oxbows, and ponds indicates some hydraulic connection with shallow ground water.

ISDA collected water quality data for this AU in 1998, 1999, and 2008. Data from 1998 and 1999 can be used as Tier II data for use attainment decisions. Data indicate that 85% of single-sample bacteria analyses exceed criteria, but geomean bacteria data has not been collected. Sediment concentrations exceed TMDL targets and appear to exceed criteria, and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria are met.

This AU should be listed in Section 5 for bacteria and sediment and Section 4c for flow and habitat alteration in the next Integrated Report.

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Section 1: Introduction

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes, pursuant to Section 303 of the CWA, are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the nation's waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list (a "§303(d) list") of impaired waters. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards.

Idaho Statute 39-3611(7) requires a five-year cyclic review process for Idaho TMDLs:

> The director shall review and reevaluate each TMDL, supporting subbasin assessment, implementation plan(s) and all available data periodically at intervals of no greater than five (5) years. Such reviews shall include the assessments required by section 39-3607, Idaho Code, and an evaluation of the water quality criteria, instream targets, pollutant allocations, assumptions and analyses upon which the TMDL and subbasin assessment were based. If the members of the watershed advisory group, with the concurrence of the basin advisory group, advise the director that the water quality standards, the subbasin assessment, or the implementation plan(s) are not attainable or are inappropriate based upon supporting data, the director shall initiate the process or processes to determine whether to make recommended modifications. The director shall report to the legislature annually the results of such reviews.

This report is intended to meet the intent and purpose of Idaho Statue 39-3611(7). The report documents the review of an approved Idaho TMDL and implementation plan and provides consideration of the most current and applicable information in conformance with Idaho Statute 39-3607, evaluation of the appropriateness of the TMDL to current watershed conditions, implementation plan evaluation, and consultation with the Watershed Advisory Group (WAG). An evaluation of the recommendations presented is provided. Final decisions for TMDL modifications are decided by the Department of Environmental Quality (DEQ) Director. Approval of TMDL modifications is decided by the U.S. EPA, with consultation by DEQ.

About Assessment Units

Prior to 2002, impaired waters were defined as stream segments with geographical descriptive boundaries. In 2002, DEQ modified the structure and format of Idaho's 303(d) list by combining it with the 305(b) report, which is required by the CWA to inform Congress of the state of Idaho's waters. This modification included identifying stream segments by assessment units (AUs) instead of non-uniform stream segments, and defining the use support of stream AUs by five categories, each of which is published as a section in the integrated report. AUs now define all the waters of the state of Idaho. These units and the methods used to describe them can be found in the Water Body Assessment Guidance, second edition (WBAG II) (Grafe, et al., 2002). AUs are groups of similar streams that have similar land use practices, ownership, or land management. Stream order, however, is the main basis for determining AUs— even if ownership and land use change significantly, an AU remains the same. Because AUs are an extension of water body identification numbers, there is now a direct tie to the water quality standards (WQS) for each AU, so that beneficial uses defined in the WQS are clearly tied to streams on the landscape.

To facilitate comparisons between the 1998 303(d) list and the 2002 Section 5 "impaired waters" category in the integrated report, a crosswalk from the 1998 303(d) list to the new AUs was included

in the 2002 integrated report. A copy of the report is available from the DEQ Web site at http://www.deq.state.id.us/water/data_reports/surface_water/monitoring/2002.cfm#2002final. The boundaries from the 1998 303(d)-listed segments have been transferred to the new AU framework using an approach quite similar to how DEQ has been writing SBAs and TMDLs. All AUs contained in any listed segment were carried forward to the 2002 303(d) listings in Section 5 of the integrated report (DEQ, 2005). Any AU not wholly contained within a previously listed segment, but partially contained (even minimally), was also included on the 303(d) list. This was necessary to maintain the integrity of the 1998 303(d) list and continuity with the TMDL program. The Lower Boise River subbasin waterbodies listed on the 2002 303 (d) list are included in this report, but the review is focused on the draft 2008 status lists.

When new monitoring data indicate full support, only the AU that the data represents will be removed (de-listed) from the 303(d) list (Section 5 of the integrated report).

Because all of the AUs discussed in this review are in the Lower Boise River subbasin, (HUC 17050114) the AUs will be referred to by the numerical suffix assigned to each AU in Idaho's WQS. For example, the AU identified in Idaho WQS as ID17050114SW001_02 is abbreviated to 001_02.

Subbasin at a Glance

The Lower Boise River Subbasin is identified in the Idaho WQS as water body ID17050114, with 36 AUs and several site-specific WQS described under Section 150.12 (IDAPA 58.01.02). As described in the Lower Boise River TMDL (DEQ, 1999), the subbasin drains 1,290 square miles (mi2) of rangeland, forests, agricultural lands and urban areas into the Snake River at the confluence between the cities of Adrian and Nyssa, Oregon. The Lower Boise River is a 64-mile long seventh-order stream, which flows through Ada and Canyon counties. The subbasin also drains portions of Elmore, Gem, Payette, and Boise counties. The river aspect is northwest from Lucky Peak Dam outfall to the confluence with the Snake River near Parma, Idaho. There are at least seven 3rd order, one 4th order and one 6th order tributaries to the Lower Boise River (Figure 1). One other 6th order stream, Sand Hollow Creek, is included in the subbasin but drains to the Snake River approximately 1 mile north of the Lower Boise River confluence.

The Lower Boise River subbasin was studied in 1995 by the Army Corps of Engineers (ACOE) to identify water resource problems and opportunities in the basin. The ACOE identified factors that contribute to beneficial use impairments of surface water and environmental degradation in the Lower Boise River subbasin as follows:

- Numerous irrigation structures (more than 25 canals and ditches)
- Stormwater runoff
- Wastewater discharge
- Agricultural drains
- Ground water effluent
- Poor water quality of tributaries
- Reservoirs altering natural streamflow dynamics
- Erodible constructed levees
- Riparian corridor vegetation alteration (result of modified flow dynamics)
- Floodplain encroachment by urban development
- Ground water infiltration of municipal sewage systems
- Temporary earthen dams for irrigation diversions
- Absence of conservation plans
- Water supply and delivery problems

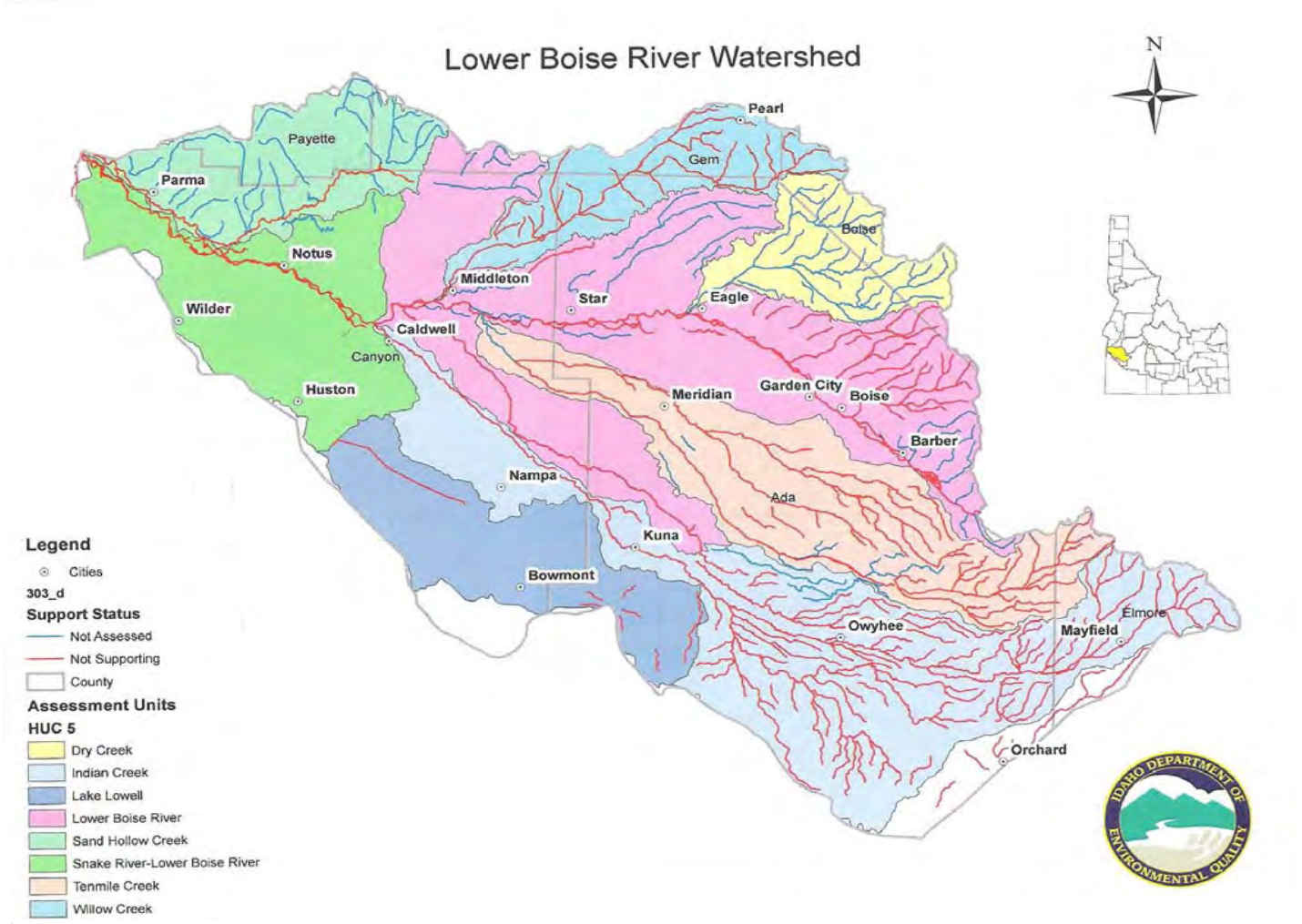


Figure 1. Lower Boise River subbasin and beneficial use support status of waterbodies in the subbasin from the 2008 draft Integrated Report.

While there are several reports describing the connectivity and interaction between shallow ground water and surface water in the Lower Boise River subbasin (Cosgrove and Taylor, 2007; IWWRI, 2004; USACE 1995, etc.), conjunctive use issues in the subbasin are outside the focus of this report and will not be addressed here.

The population in Ada and Canyon counties is presently estimated at 532,337, with most of the population (359,035) residing in Ada County (US Census Bureau, 2008). The growth rate predicted by the ACOE was more than 3% per year, for an estimated population of 600,000 in Ada and Canyon counties by the year 2014. Ada County is 47% private and 45% federally owned, whereas Canyon County is 93% privately owned. Land use is divided between three dominant uses: rangeland (51%), irrigated crop and pasture (31%) and urban/suburban (18%), (Figure 2). There are 4,922 miles of paved and unpaved roads in the subbasin. During the past two decades, land use has been steadily converted from agricultural to urban uses. Between 1996 and 2004, a total of 10,930 acres were converted from agriculture to urban uses (IASCD, 2005).

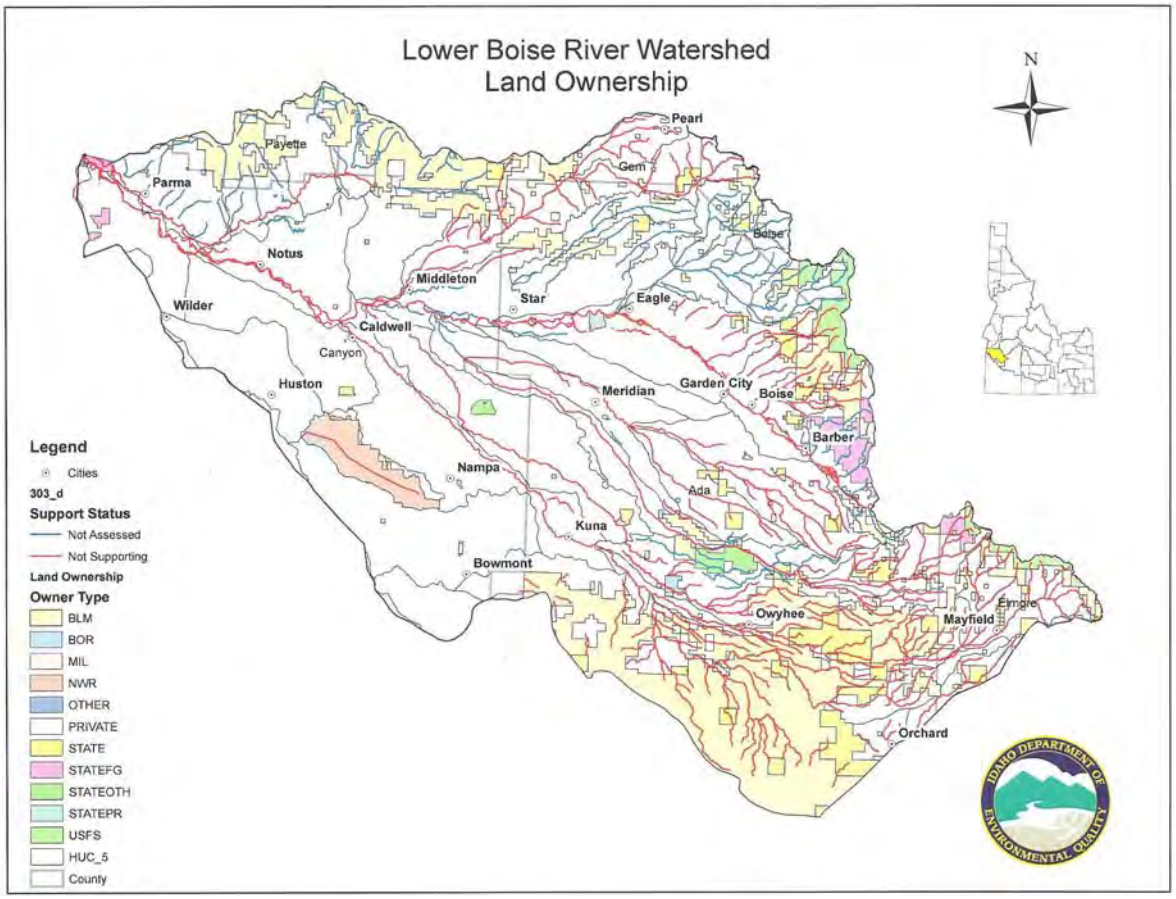


Figure 2. Land use and 303(d)-listed streams in the Lower Boise River subbasin.

Human activities have affected pollutant loads in the Lower Boise River subbasin since the mid-1800s, through modification of natural systems to accommodate permanent human residence and irrigation systems that were developed throughout the subbasin by the 1860s (ISHS, various works). There are at least 49 dams, regulated by the Idaho Department of Water Resources (IDWR) (Figure 3) and hundreds of diversions, not all of which are documented. In addition to regulated dams there are numerous other impoundments on private land with unknown water quality and storage capacity.

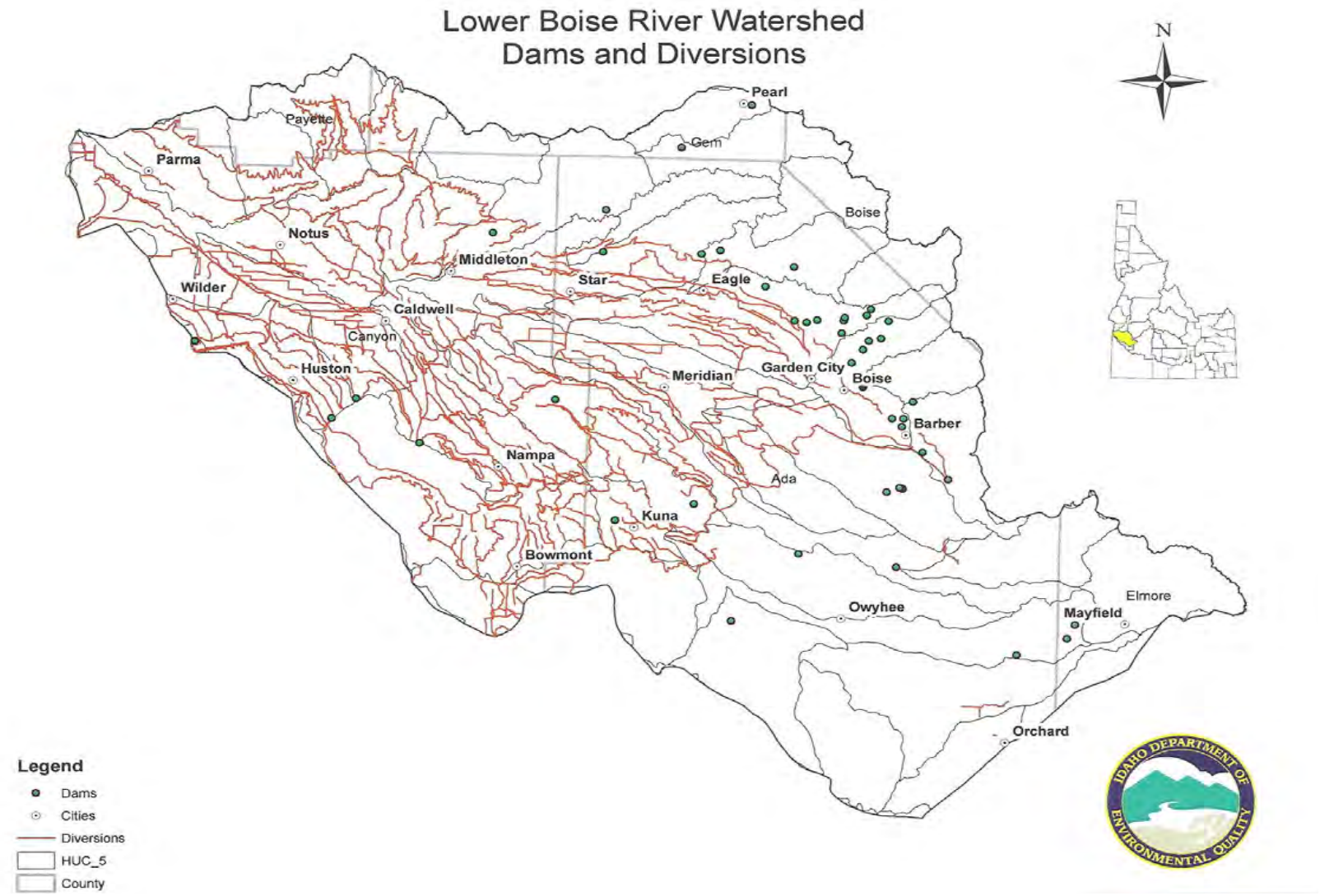


Figure 3. Lower Boise River dams and diversions (canals) permitted through the Idaho Department of Water Resources (IDWR).

Because the Lower Boise River is a tributary of significance to the Snake River, it received an LA for phosphorus in the Snake River-Hells Canyon (SR-HC) TMDL (IDEQ, ODEQ, 2004). A nutrient implementation plan for the Lower Boise River and major tributaries was completed in June 2008, revised in December 2008, and is available from the DEQ internet site at http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/boise_river_lower/boise_river_lower.cfm#plan2. This review will not address nutrients outside of presenting recent information from data collected within the past five years. Lake Lowell, also in the Lower Boise River Subbasin, is being addressed in a separate SBA/TMDL and will not be discussed in this document.

The 2002 Integrated Report (DEQ, 2005) listed 23 AUs as impaired (Table 8) and the draft 2008 Integrated Report (DEQ, 2008) lists 24 AUs as impaired (Figure 1, Table 10). Section 2 of this report provides details of the existing TMDLs and Section 3 provides details regarding current designated beneficial uses for each AU and recent water quality data. Section 4 is a review of implementation activities throughout the subbasin in the past five years and Section 5 summarizes the five year review.

The geology, climate, hydrology (ground and surface), channel morphology, and biologic characteristics of the basin were all discussed in detail in the *Lower Boise River TMDL Subbasin Assessment, Total Maximum Daily Loads* (DEQ, 1999). This review has yielded no new information on these topics, but will address subbasin characteristics that have changed since the TMDL was written: population, land use, point sources, WQS, and LAs assigned to the Lower Boise River and its tributaries since 1999.

Section 2: TMDL Overview

At the time the Lower Boise River TMDL (DEQ, 1999) was developed, four stream segments and seven tributaries were on the 303(d) list for a variety of pollutants (Table 1); including flow alteration, sediment, dissolved oxygen, oil and grease, nutrients, bacteria and temperature. Based on the results of the SBA, stream segments were delisted in 1998 for dissolved oxygen and oil and grease and TMDLs were developed for sediment and bacteria, with load allocations (LAs) for all major tributaries at their confluence with the Lower Boise River. A recommendation was made to evaluate a range of options for applying or developing alternative temperature criteria (DEQ, 1999).

Listed Waters

The information in this section of the report is summarized or annotated from the original TMDL (DEQ, 1999) to describe the 1996 and 1998 303(d) listed stream segments and beneficial uses (Table 1), and WQS criteria associated with those stream segments. Load allocations established in the 1999 TMDL are shown in Table 2.

Table 1. Summary of §303(d)-listed stream segments in the Lower Boise River TMDL Subbasin Assessment, Total Maximum Daily Loads (DEQ, 1999).

Water Body Name	AU*	Boundaries	Pollutant* (1996 303(d) list)	1996 Designated Uses* *(Stream Segment Boundaries)*	Pollutants* De-listed in 1998	SBA/TMDL
Boise River	011b_06	Lucky Peak Dam to Barber Diversion	Flow Alteration	DWS, AG, CWB, SS, PCR, SCR (Lucky Peak Dam to River Mile 50 (Veterans Parkway))		Sediment, Bacteria-1999, Addendum-2008
Boise River	011a_06; 005_06	Barber Diversion to Star	Sediment, DO, Oil & Grease	DWS, AG, CWB, SS, PCR, SCR (to Veterans Parkway); Ag, CWB, SS, PCR (Veterans Parkway to Star)	DO, Oil & Grease	Sediment, Bacteria-1999, Addendum-2008
Boise River	005_06; 001_06	Star to Notus	Nutrients, Sediment, DO, Temperature, Bacteria	AG, CWB, PCR, SCR	DO	Sediment, Bacteria-1999, Addendum-2008
Boise River	001_06	Notus to Snake River	Nutrients, Sediment, DO, Temperature, Bacteria	AG, CWB, PCR, SCR	DO	Sediment, Bacteria-1999, Addendum-2008

* AU – assessment unit, SBA/TMDL – subbasin assessment/total maximum daily load, DO – dissolved oxygen, DWS – drinking water source, AG – agriculture, CWB – cold water biota [now COLD -cold water communities, PCR – primary contact recreation, SCR – secondary contact recreation, SS – salmonid spawning

Table 2. Load Allocations, Lower Boise River 1999 TMDL

Water Body Name	Boundaries	AU*	Pollutants* 1996 303(d) List	1996 Designated Uses*	LAs in TMDL (1999)
Fivemile Creek	Headwaters to Fifteenmile Creek	010	DO, Nutrients, Sediment	CWB, SCR	
Tenmile Creek	Headwaters to Fifteenmile Creek	080	DO, Nutrients, Sediment	CWB, SCR	
Indian Creek	Indian Creek, Headwaters to New York Canal	003	Nutrients, Sediment	SS, CWB, PCR	
Indian Creek	New York Canal to Boise River	003; 002	DO, Nutrients, Oil and Grease, Sediment	CWB, PCR	Sediment- 5.74 Tons/day Bacteria- 50 (PCR; 200 (SCR)-geomean
Mason Creek	Mason Creek	006	DO, Nutrients, Sediment	CWB, SCR	Sediment-21.48 Tons/day- Bacteria- 50 (PCR; 200 (SCR)-geomean
Sand Hollow Creek	Sand Hollow Creek	017		CWB, SCR	
Blacks Creek	Headwaters to Blacks Creek Reservoir	009	DO, Nutrients, Sediment	CWB, SCR	
Willow Creek	Headwaters to Boise River	015	Unknown	CWB, SCR	Sediment-2.28 Tons/day- Bacteria- 50 (PCR; 200 (SCR)-geomean
Cottonwood Creek	Headwaters to Freestone Creek	012	Unknown	CWB, SCR	

* AU – assessment unit, CWB- Cold Water Biota, SS-Salmonid Spawning, PCR-Primary Contact Recreation, SCR-Secondary Contact Recreation

Permitted Point Sources

Point sources require a National Pollutant Discharge Elimination System (NPDES) permit from the EPA in order to discharge effluent into a surface waterbody. In 1999, there were relatively few permitted point sources in the subbasin (Table 3, Figure 4). These permits limited the concentration of sediment, bacteria, and in some cases, ammonia and temperature. WLAs from the TMDL were intended to be included in future NPDES permits in the subbasin.

Table 3. Municipal wastewater treatment plants (WWTP) and selected permitted point sources discharging to the Lower Boise River and its tributaries in 1998 (DEQ, 1999).

Point Source Design/Permit	Flow (MGD*)	Receiving Water
City of Boise - Lander Street	15	Boise River
City of Boise - West Boise WWTP	24	Boise River, South Channel
City of Meridian WWTP	2.82	Fivemile Creek and Boise River
Star Water and Sewer District	0.33	Lawrence-Kennedy Canal
City of Nampa WWTP	11.76	Indian Creek
City of Middleton WWTP	1.83	Boise River

Point Source Design/Permit	Flow (MGD*)	Receiving Water
City of Caldwell WWTP	8.48	Boise River
City of Wilder WWTP	0.075	Wilder Ditch Drain
City of Notus WWTP	0.056	Conway Gulch
City of Parma WWTP	0.31	Sand Hollow Drain
IDFG Fish Hatchery	20	Wilson Drain
Armour Fresh Meats	0.475	Indian Creek

* MGD – million gallons per day

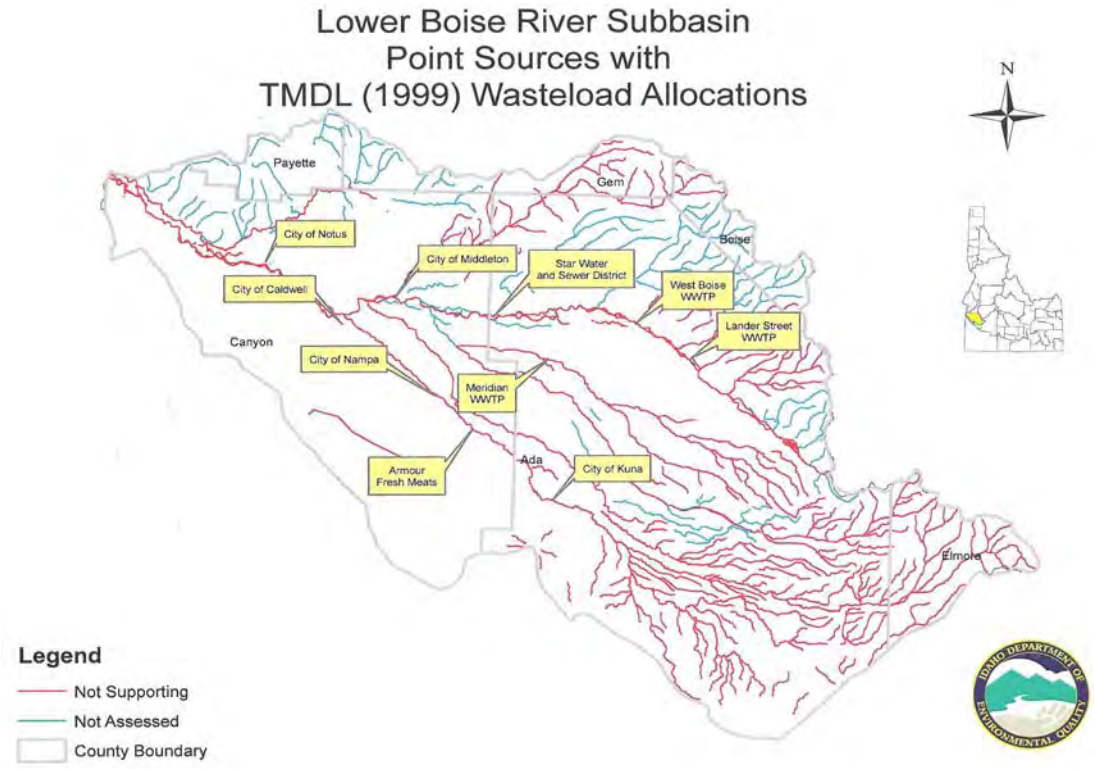


Figure 4. Permitted point sources with wasteload allocations in the Lower Boise River Subbasin TMDL (DEQ, 1999).

Nonpoint Sources

The identified nonpoint sources of sediment and bacteria pollution in the subbasin included agricultural activities, stormwater runoff, construction activity, septic systems and bank erosion. Irrigation, streambank trampling by livestock and construction activities were identified as primary sources of sediment. Construction activities and stormwater runoff have since been regulated to control pollution through federal NPDES permits.

Bacteria sources were believed to be primarily from nonpoint sources such as septic systems, livestock operations and wildlife.

Pollutant Targets

Water Quality Criteria

In 1998, Idaho WQS contained numeric and narrative criteria to protect beneficial uses. The following water quality criteria were applicable to the pollutants of concern listed on the 1996 and 1998 Section 303(d) lists for existing and designated uses on the Boise River at the time the TMDL (DEQ, 1999) was published.

Bacteria

Both primary and secondary contact recreation beneficial uses have associated numeric criteria in Idaho's WQS.

Primary Contact Recreation (May 1 - September 30) fecal coliform bacteria colonies:

- may not exceed 500/100 ml at any time;
- may not exceed 200/100 ml in more than 10% of the total samples taken over a thirty-day period; and
- may not exceed a geometric mean of 50/100 ml based on a minimum of five samples taken over a thirty-day period (IDAPA 16.10.02.250.01.a).

Secondary contact recreation (all year) fecal coliform bacteria colonies:

- may not exceed 800/100 ml at any time;
- may not exceed 400/100 ml in more than 10% of the total samples taken over a thirty-day period; and
- may not exceed a geometric mean of 200/100 ml based on a minimum of five samples taken over a thirty-day period (IDAPA 16.01.02.250.01.b).

Sediment

Sediment shall not exceed quantities specified in IDAPA 15.01.02.250, or, in the absence of specific sediment criteria, quantities that impair designated beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in Sub 350.02.b (IDAPA 16.01.02.200.08). The sediment target was established in the 1999 TMDL by a literature review and comparison with other states' total suspended solids (TSS) criteria. It was found that no more than 80 mg/L TSS in a 14-day acute exposure would be protective of adult fish. The target of no more than 50 mg/L TSS in a 60-day chronic exposure would be protective of the eggs and larval stages of fish.

Turbidity

For cold water biota, turbidity below any applicable mixing zone set by the Department of Health and Welfare, DEQ, shall not exceed background turbidity by more than 50 Nephelometric Turbidity Units (NTU) instantaneously, or more than 25 NTU for more than 10 consecutive days (IDAPA 15.01.02.250.02.c.iv).

Nutrients

Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses (IDAPA 16.01.02.200.06).

Temperature

For warm water biota (WWB), waters are to exhibit the following characteristics:

> Water temperatures of 33 °C or less with a maximum daily average no greater than 29 °C. (IDAPA 16.01.02.250.02.b.ii).

For cold-water biota (CWB), waters are to exhibit the following characteristics:

> Water temperatures of 22 °C or less with a maximum daily average no greater than 19 °C. (IDAPA 16.01.02.250.02.c.ii).

For salmonid spawning (SS), waters are to exhibit the following characteristics during the spawning and incubation period for the particular species inhabiting those waters:

> Water temperatures of 13 °C or less with a maximum daily average no greater than 9 °C. (IDAPA 16.01.02.250.02.d.ii).

The time periods for salmonid spawning that applied to species in the Boise River are: rainbow trout, January 15 to July 15; brown trout, October 1 to April 1; mountain whitefish, October 15 to March 15.

Control/Monitoring Points

The group originally known as the Lower Boise River Water Quality Plan (LBRWQP) (the WAG) contracted the USGS to continue collecting physical, chemical and biological data from the river and selected tributaries. The WAG selected 17 control monitoring locations for sediment and 18 control monitoring locations for bacteria. The mainstem river had two monitoring locations for sediment and three for bacteria. The USGS gages on the Boise River at Middleton and Parma were designated as control monitoring locations for sediment and the USGS gage at Glenwood Bridge was added to the sediment locations as a control location for bacteria monitoring. The other locations were distributed throughout the subbasin at the mouths of tributaries and drains. The city of Boise, city of Nampa, Idaho State Department of Agriculture (ISDA), Bureau of Reclamation (BOR), LBRWQP, and DEQ have collected water quality data or have contracted to have water quality data collected at many locations throughout the subbasin during the past five years. Data not collected by DEQ was retrieved from public databases or provided by other agencies as a professional courtesy. A full list of data sources is provided in Table 12 and data is provided in Appendix C.

Water quality monitoring data required as a part of EPA-administered NPDES permits include the points of discharge for each permitted point source and are evaluated in the absence of other relevant data for the AU of interest.

Load Capacity

Load capacities for the Lower Boise River were calculated, using Middleton and Parma as control points, based on analysis of low, median, and high-flow years. Different land uses, land management practices, and flow control management (dam regulation and irrigation flows), determine the capacity of the Boise River to assimilate pollutants.

Sediment

The surrogate measure for sediment pollution in the Lower Boise River is total suspended sediment (TSS or SSC). Only high flows and irrigation flows were considered in calculating load capacities because data indicated that TSS did not exceed maximum concentration thresholds for protection of beneficial uses and did not require an allocation during low flows. In the Lower Boise River, the critical flows are the 30-day and 7-day average flows for each season. The seasonal load capacities were determined by multiplying the minimum 30- and 7-day average flows by the 50 (for 60 days) and 80 (for 14 days) mg/L target concentrations.

Bacteria

The load capacity for bacteria was based on existing water quality standard criteria for primary and secondary contact recreation, using fecal coliform as a surrogate indicator. Two stream segments of the Lower Boise River were listed as impaired by bacteria, Star to Notus, and Notus to the Snake River. The compliance locations for the TMDL (DEQ, 1999) are the Boise River at the Glenwood Bridge (13206000), the Boise River at the USGS Middleton gage (13210050), and the Boise River at the USGS Parma gage (13213000).

Load Allocations

Although Lower Boise River stream segments were listed as impaired by flow alteration due to the many diversions and dams, a TMDL was not written for this impairment because it is not a pollutant for which a load can be allocated and water rights are not regulated by DEQ. LAs for sediment in the Boise River were assigned to the four listed stream segments of the mainstem on the 1998 303(d) list: from Lucky Peak Dam to the Barber diversion, Barber diversion to Star, Star to Notus and Notus to the confluence with the Snake River. LAs for bacteria were assigned to two listed stream segments as described in the previous paragraph. The rationale for each pollutant and allocation are thoroughly described in the TMDL and summarized in the following tables and paragraphs.

Sediment

Sediment allocations for the Lower Boise River were designated in the 1999 TMDL and Kuna was added in the 2008 addendum as summarized in Table 4 and Table 5.

Table 4. Subbasin point source wasteload allocations for total suspended sediment (TSS) (DEQ, 1999; 2008).

Source	Design Flow, MGD*	Monthly Average Permit Limit TSS* mg/L	TSS Average Wasteload Allocations lbs/day
Lander Street	15	30	3400 lbs/day monthly[1], 5000 lbs/day weekly[1] 3500 lbs/day monthly[2], 3750 lbs/day weekly[2]
West Boise	24	30	6200 lbs/day monthly, 9300 lbs/day weekly
Meridian	2.82	30	710 lbs/day monthly, 1065 lbs/day weekly
Nampa	11.76	30	3000 lbs/day monthly, 4500 lbs/day weekly
Caldwell	8.48	30	2125 lbs/day monthly, 3183 lbs/day weekly
Star	0.33	70	193 lbs/day monthly, 290 lbs/day weekly
Middleton	1.83	70	1070 lbs/day monthly, 1605 lbs/day weekly
Notus	0.056	70	33 lbs/day monthly, 50 lbs/day weekly
Armour	0.475	None	125 lbs/day monthly, 154 lbs/day weekly
Kuna	3.5	30	876 lbs/day monthly, 1314 lbs/day weekly
Total			**8.4 tons/day[3] monthly average**

* MGD – million gallons per day
[1] April 1 – September 30
[2] October 1 – March 31
[3] Using April – September limits Boise City, monthly limits all facilities

The sediment LAs to nonpoint sources were based on an equal percent reduction for all tributaries and drains. A 37% reduction was computed from the 1995 low flow year.

Table 5. Subbasin TMDL (DEQ, 1999) tributary and nonpoint source load allocations for total suspended sediment (TSS).

Source	TSS Allocation, Tons per Day
Eagle Drain	1.61
Thurman Drain	0.34
Riparian Load #1	2.45
Allocations to Middleton	**4.40**
Fifteenmile Creek	18.02
Star Feeder	1.73
Long Feeder	0.35
Watts Creek	0.28
Mill Slough	7.08
Willow Creek	2.28
Mason Slough	1.20
Mason Creek	21.48
East and West Hartley Gulch	5.31
Indian Creek	5.74
Conway Gulch	7.14
Dixie Drain	25.91
Riparian Load #2, #3	4.90
Allocations to Parma	**101.42**
Watershed Total	**105.82**

Bacteria

The TMDL used fecal coliform allocations to comply with WQS in effect in 1999. The bacteria criteria were modified in 2007 to an *E. coli* standard. The criteria for *E. coli* are not to exceed 126 colony-forming units per 100 milliliters (cfu/100 mL) based on the geometric mean (geomean) of five samples collected three to seven days apart within a 30-day period. As described in the TMDL and Addendum, the geomean value applies year-round at variable flows.

The fecal coliform target was revised from the Lower Boise River TMDL (DEQ, 1999) in an addendum approved by EPA in June 2008. The 1999 and 2008 revised allocations are summarized in Table 6 and Table 7. Critical low-flow bacteria loads for the two listed stream segments of the Lower Boise River were developed using information from USGS gage sites at Glenwood Bridge (13206000), Middleton (13210050) and Parma (13213000). Each listed tributary in the subbasin was assigned a load allocation at its confluence with the mainstem Lower Boise River.

Table 6. Lower Boise River TMDL (DEQ, 1999) and Addendum (DEQ, 2008) bacteria load allocations for mainstem and point source locations.

Source	Design Flow (cfs*)	Primary Recreation Target, FC* / *E. coli cfu/100 mL*	Secondary Recreation Target, FC / *E. coli cfu/100 mL*	Point Source Wasteload Allocations May 1 - Sept. 30	Point Source Wasteload Allocations Oct. 1 - Apr. 30
Lander Street WWTP	15			Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Glenwood Bridge	110	50 / *126 geomean*	200 / *126 geomean*		
West Boise	24	50 / *126 geomean*		Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800

Source	Design Flow (cfs*)	Primary Recreation Target, FC* / *E. coli cfu/100 mL*	Secondary Recreation Target, FC / *E. coli cfu/100 mL*	Point Source Wasteload Allocations May 1 - Sept. 30	Point Source Wasteload Allocations Oct. 1 - Apr. 30
Meridian to Fivemile Creek	2.82	50 / *126 geomean*		Monthly 100 Weekly 200 Daily 800	Monthly 100 Weekly 200 Daily 800
Meridian to Boise River	2.82	50 / *126 geomean*		Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Nampa	11.76	50 / *126 geomean*		Monthly 200 Weekly 200 Daily 800	Monthly 100 Weekly 200 Daily 800
Caldwell	8.48	50 / *126 geomean*		Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Star	0.33	50 / *126 geomean*		Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Middleton	151	50 / *126 geomean*	200 / *126 geomean*	Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Wilder		*126 geomean*		Monthly 100 Weekly 200 Daily 500	Monthly 100 Weekly 200 Daily 800
Notus	0.056	50 / *126 geomean*		Monthly 50 Weekly 100 Daily 500	Monthly 100 Weekly 200 Daily 800
Armour (XL Four Star Beef)	0.475	50/*126 geomean*		Monthly 50 Daily 400	Monthly 200 Daily 400
Kuna	3.5	50 / *126 geomean*			
Parma		50 / *126 geomean*	200 / *126 geomean*		

* cfs – cubic feet per second; FC – fecal coliform; cfu – colony-forming units

Table 7. Lower Boise River TMDL (DEQ, 1999) and Addendum (DEQ, 2008) bacteria load allocations for nonpoint source locations (tributaries and drains).

Source	Primary Recreation Target, FC / *E. coli in cfu/100 mL*	Secondary Recreation Target, FC / *E. coli in cfu/100 mL*
Eagle Drain Thurman Drain Fifteenmile Creek Star Feeder Long Feeder Watts Creek Mill Slough Willow Creek Mason Slough Mason Creek East and West Hartley Gulch Indian Creek Conway Gulch Dixie Drain	FC 50 *E. coli geomean 126*	FC 200 *E. coli geomean 126*

Margin of Safety

Sediment

The TMDL (DEQ, 1999) and technical appendices detail the methods used to determine the sediment criteria protective of the most sensitive beneficial use, salmonid spawning (SS). It was determined that 80 mg/L TSS in a 14-day acute exposure would be protective of adult fish. The target of 50 mg/L TSS in a 60-day chronic exposure would be protective of the eggs and larval stages of fish. The salmonids present in the Boise River are rainbow/redband trout, brown trout and mountain whitefish.

In order to arrive at conservative values for target loads, the 30-day low-flow was selected as the critical flow. This flow is lower than the 60-day minimum flow associated with chronic criteria. Sediment LAs in the TMDL are less than the total capacity, which left a margin of safety relative to the target concentration and the critical flow load capacity. Therefore, the loads incorporate a variety of implicit and explicit safety elements that conservatively allocate suspended sediment loads to the Lower Boise River subbasin. Using the critical flow condition (low-flow), the margin of safety at Parma is 41% of the river capacity, or 37 tons per day.

Bacteria

The beneficial use affected by bacteria pollution in the Lower Boise River subbasin is primary contact recreation (PCR) from May 1 to September 30 and secondary contact recreation (SCR) for the rest of the year. The TMDL and technical appendices provide details of methods and rationale for developing a bacteria TMDL for the Lower Boise River from Star to Notus and Notus to the confluence with the Snake River. Because contact recreation is presumed to occur in the subbasin all times of year under all flow conditions, no specific flow condition is recognized as critical for bacteria.

The point source WLAs for bacteria were equal to existing permit limits and the tributary loads were estimated using the lowest flow year on record for the Lower Boise River subbasin (1992). These conditions created implicit conservative estimated load capacities that were augmented by calculating geometric means (geomeans) using widely-spaced sample results, as detailed in appendix I of the TMDL, and presuming no dilution available to the tributaries.

The TMDL recommended that if *E. coli* became the standard for bacteria criteria, reported results of *E. coli* samples could be used to demonstrate compliance with criteria. The reductions needed to achieve target loads were large and conservative, with most tributaries requiring more than 90% reduction in load. The reduction was recommended as an indicator of the level of reduction that may be necessary to meet numeric WQS criteria rather than a goal.

Seasonal Variation

In order to protect the most sensitive beneficial use from sediment pollution, critical flow and load capacities were calculated for the high-flow season (first flush of sediment) and the irrigation season. To make the load capacity more sensitive to the seasonal characteristics of the watershed, load capacities were calculated for low, median and high-flow years at Middleton and Parma. .

For bacteria, the seasonal variation is supported in the WQS by the difference between primary and secondary contact recreation criteria, with primary criteria applicable from May 1 to Sept. 30, and secondary criteria applicable the rest of the year. Using the geomean criteria, a single sample result above numeric criteria does not necessarily constitute exceedance of criteria.

Reserve for Growth

A TMDL implementation plan was developed in 2003 and an addendum to the TMDL was developed and approved by EPA in 2008. The addendum defines the method for allocating reserved loads in the future and provides sediment and bacteria wasteload allocations (WLAs) to the City of Kuna.

A reserve of total suspended sediment is included for each point source for the sum of the expected suspended sediment loads that occur in a twenty-year period. This reserve accounts for the difference between current design flows and the flows expected after 20 years of population growth in the Treasure Valley. The 20-year timeframe is consistent with other community planning documents being developed by communities in the subbasin. The most recent calculated reserve for sediment is 3.098 tons/day (DEQ, 2008). Because there is no reserve capacity for bacteria in the Lower Boise River subbasin, permit limits are based on the gemoean water quality standard for *E. coli* of 126 cfu per 100/mL.

Tributary Subbasin Assessments

After the SBA and TMDLs for the Lower Boise River were written, separate SBAs addressed pollutants including nutrients, bacteria and sediment in the Lower Boise River and for the major tributaries: Blacks, Fivemile and Tenmile, Indian, Mason and Sand Hollow Creeks (DEQ, 2001). These documents are available from the DEQ website at http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm.

The results of the 2001 Lower Boise River SBA of tributaries for nutrients and sediment are summarized in Table 8 and the 2002 303 (d) list is provided in Table 9. The draft 2008 Integrated Report was open for public comment from January 2008 through February 20, 2008 and lists 26 AUs in the Lower Boise River Subbasin in Section 5: Impaired Waters, Lakes and Rivers "(303(d) list)".

Table 8. Summary of Lower Boise River and tributaries subbasin nutrient and sediment assessment (2001).

Stream Segment	AU	Pollutants Addressed in the SBA	Proposed Listing Action	Other Action
Lower Boise River Star to Notus and Notus to Snake River	011b_06; 001_06	Nutrients	Remove from the 303(d) list	None
Blacks Creek	009	Nutrients, Sediment, Dissolved Oxygen, Bacteria	Remove nutrients, sediment, dissolved oxygen from the 303(d) list	None
Fivemile Creek	010	Nutrients, Sediment, Dissolved Oxygen, Bacteria	Remove nutrients, sediment, dissolved oxygen from the 303(d) list; add bacteria	Schedule bacteria TMDL
Indian Creek headwaters to New York Canal	003	Nutrients, Sediment	Remove nutrients and sediment from the 303(d) list	None

Stream Segment	AU	Pollutants Addressed in the SBA	Proposed Listing Action	Other Action
Indian Creek New York Canal to mouth	003; 002	Nutrients, Dissolved Oxygen, Oil/Grease, Bacteria	Remove nutrients and oil/grease from the 303(d) list. Do not remove sediment or dissolved oxygen. Add bacteria to the 303(d) list.	Sediment: implement the Boise River sediment TMDL and monitor sediment conditions in Indian Creek. DO: monitor DO levels to ensure that they remain above 6.0 mg/L. Schedule bacteria TMDL.
Mason Creek	006	Nutrients, Sediment, Dissolved Oxygen, Bacteria	Remove nutrients, sediment and dissolved oxygen from the 303(d) list; add bacteria	Schedule bacteria TMDL
Sand Hollow Creek	017	Nutrients, Sediment, Dissolved Oxygen, Bacteria	Remove nutrients and DO, but not sediment from the 303(d) list. Add bacteria.	Sediment: Sand Hollow Creek SAWQP. Monitor sediment conditions in Sand Hollow Creek.

Table 9. Lower Boise River subbasin 2002 303(d) list.

AU	Stream Segment Description	Pollutant
001_02	Boise River- Indian Creek to mouth	Temperature
001_06	Boise River- Indian Creek to mouth	Nutrients, Temperature
002_04	Indian Creek - 4th order	Fecal Coliform, Temperature
003_02	Indian Creek - 1st and 2nd order	Fecal Coliform, Nutrients, Sediment
003_03	Indian Creek - 3rd order	Fecal Coliform, Sediment, Temperature
003_04	Indian Creek - 4th order	Nutrients, DO, Sediment, Temperature
004_06	Lake Lowell	Cause Unknown
005_06	Boise River - river mile 50 (T04N, R02W, Sec. 32) to Indian Creek	Temperature
006_02	Mason Creek - entire watershed	Nutrients, DO, Sediment
008_03	Tenmile Creek - 3rd order below Blacks Creek Reservoir	Nutrients, Pathogens, Sediment
009_02	Blacks Creek - 1st and 2nd order	Unknown
009_03	Blacks Creek - 3rd order	Unknown
010_02	Fivemile Creek - 1st and 2nd order	DO, Pathogens, Sediment
010_03	Fivemile Creek - 3rd order	DO, Nutrients, Sediment
011a_06	Boise River - Diversion Dam to river mile 50 (Glenwood Bridge)	Temperature
011b_02	Boise River-Lucky Peak Dam to Diversion Dam	Flow Alteration
012_02	Stewart Gulch, Cottonwood and Crane Creeks - 1st & 2nd order	Unknown
012_03	Cottonwood Creek - 3rd order: Fivemile Creek to Boise River	Unknown
015_02	Willow Creek - source to mouth	Unknown, Temperature
015_03	Willow Creek - source to mouth	Unknown, Temperature
016_03	Langley/Graveyard Gulch complex	Nutrients, DO, Sediment
017_03	Sand Hollow Creek - I-84 to Boise River	Fecal Coliform, DO, Sediment
017_06	Sand Hollow Creek - source to mouth	Nutrients, DO, Sediment

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Section 3: Beneficial Use Status

Idaho WQS were revised in 2007 and are defined in IDAPA 58.01.02, but have not yet been approved by EPA. The standards designate beneficial uses for Idaho surface water bodies, by HUC and subbasin (or specific water body), and set water quality criteria for the waters of the State. Idaho WQS require that surface waters of the State be protected for the most sensitive beneficial uses (IDAPA 58.01.02), which may be interpreted as existing uses, designated uses, or presumed uses. The WBAG II (Grafe et al., 2002) gives a detailed description of beneficial use identification for use assessment purposes.

Existing uses under the CWA are "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards. Designated uses are specifically listed for water bodies in Idaho in tables in the Idaho WQS (see IDAPA 58.01.02.003.27 and .02.109-.02.160 in addition to citations for existing uses).

Undesignated uses are protected for uses presumed by the state to exist. Absent information on existing uses, DEQ presumes that most waters in the state will support cold-water aquatic life and either primary or secondary contact recreation (IDAPA 58.01.02.101.01). To protect presumed uses, DEQ will apply numeric cold-water criteria (COLD) and primary or secondary contact recreation criteria (PCR/SCR) to undesignated waters. Criteria that apply to water bodies in the Lower Boise River subbasin are summarized in Figure 5.

Waters designated as special resource waters (SRW) have narrative criteria that limits existing point source discharge to current design capacity and prohibits additional permitted point source discharges. Domestic water supply (DWS) designated uses must comply with the numeric criteria for toxic substances as referenced in IDAPA 58.01.02.210. AUs 011a and 011b are the only AUs in the Lower Boise River subbasin designated as SRW and DWS.

The recent WQS revisions (2007) include a designation and criteria for modified communities (MOD) which have not yet been approved by EPA. Because creating or changing use designations and criteria require Idaho to engage in the rule-making process, designations in the current standards will remain until the required process is completed before making other changes, even if that change is to reinstate the use that was designated in previous WQS. While the MOD beneficial use criteria have not been approved by EPA, Idaho has not yet initiated the rule-making procedures required to reinstate the previous use designation. When that process is complete, all available data will be compared to the appropriate standard criteria to determine use attainment status.

Beneficial Uses

Table 10 summarizes revisions made to Idaho WQS (2007) for each of the AUs in the Lower Boise River subbasin that are listed in the draft 2008 Integrated Report.

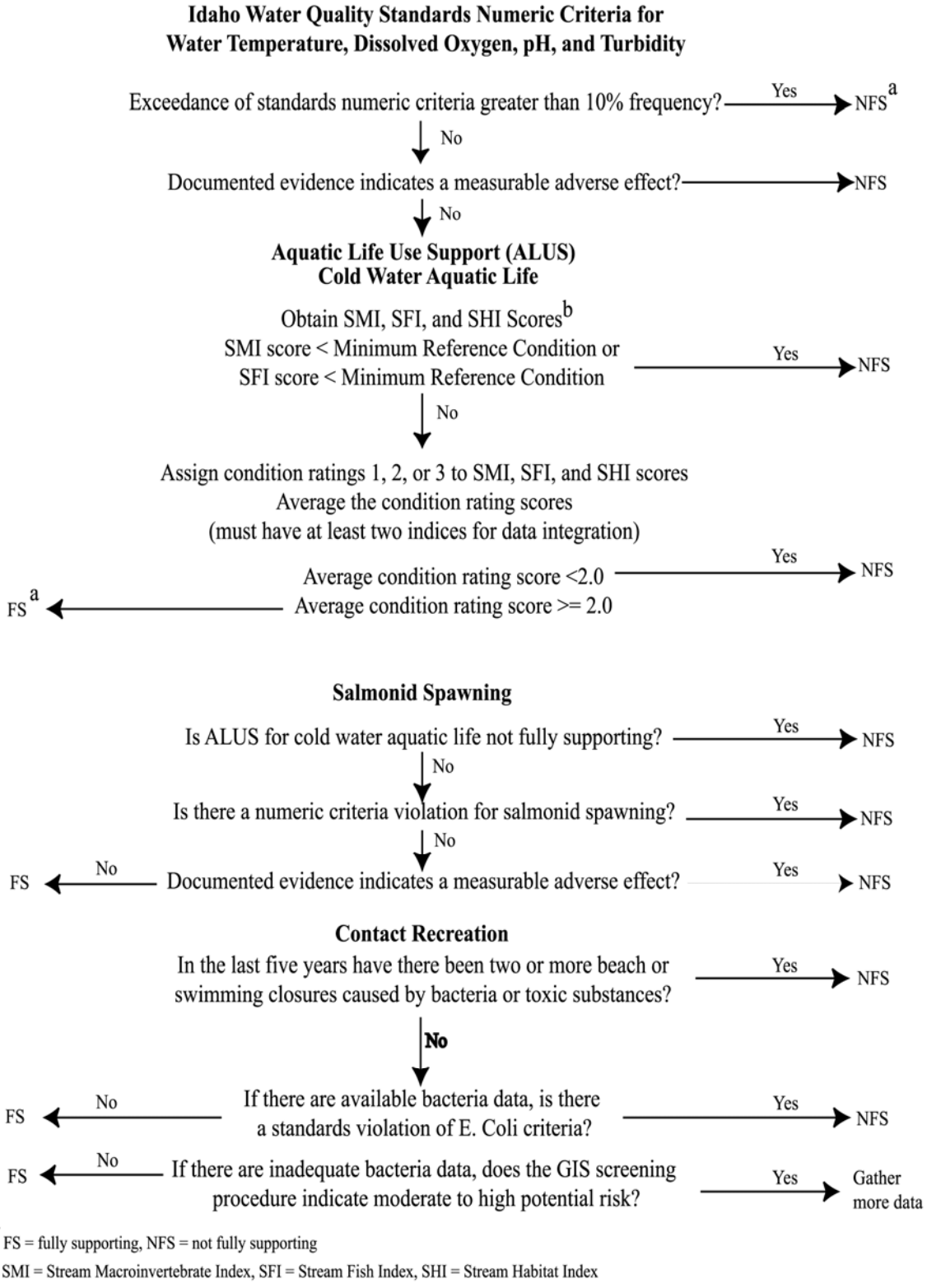
Table 10. Summary of Lower Boise River subbasin impairments from the draft 2008 Integrated Report and beneficial uses from Idaho water quality standards (2007).

Assess-ment Unit	Stream	Pollutant	Designated Use (*not approved by EPA)
001_02	Unnamed 1st and 2nd order tributaries to Boise River between Indian Creek and the mouth.	Temperature	Undesignated
001_06	Boise River 6th order from Indian Creek to the mouth, and tributaries to the 6th order.	Temperature	COLD, PCR
002_04	Indian Creek 4th order from Phyllis Canal to mouth.	Temperature, Bacteria	COLD, SCR
003_02	North Indian Creek, 1st and 2nd order.	Sediment, Bacteria, Nutrients	Undesignated
003_03	Indian Creek 3rd order, upstream of Sand Creek	Sediment, Temperature, Nutrients	COLD, SCR
003a_04	Indian Creek 4th order from Sand Creek to Phyllis Canal.	Sediment, Temperature, DO, Unknown	MOD*, SCR
005_02	First and second order unnamed streams or tributaries to the Boise River from 4 miles upstream of Eagle to Mason Creek.	Unassessed	Undesignated
005_06	Boise River 6th order, from 4 miles upstream of Eagle to Indian Creek and unnamed tributaries to 6th order.	Temperature	COLD, SS, PCR
006_02	Mason Creek source to mouth.	Sediment, Unknown, Nutrients, DO	MOD*, SCR
007_02	First and second order Fifteenmile Creek, Miller canal to mouth.	Unassessed	Undesignated
007_04	Third order Fifteenmile Creek, Miller canal to mouth.	Unassessed	MOD*, SC, SCR
08_02	1st and 2nd order tributaries to Tenmile Creek.	Unassessed	Undesignated
008_03	Tenmile Creek	Bacteria, Unknown, Nutrients	MOD*, SCR
009_02	Blacks Creek 1st and 2nd order.	Habitat Alteration	Undesignated
009_03	Blacks Creek 3rd order.	Habitat Alteration	Undesignated
010_02	Fivemile Creek 1st and 2nd order.	Bacteria	Undesignated
010_03	Fivemile Creek 3rd order.	Habitat Alteration, Unknown, Nutrients, DO	MOD*, SCR
011a_02	1st and 2nd order tributaries to Boise River from Barber Dam to Glenwood Bridge.	Unassessed	Undesignated

Assess-ment Unit	Stream	Pollutant	Designated Use (*not approved by EPA)
011a_06	Boise River from Barber Dam to Glenwood Bridge.	Temperature	COLD, SS, PCR, DWS, SRW
011b_02	1st and 2nd order streams and tributaries near outfall of Lucky Peak Dam.	Unassessed	Undesignated
011b_06	Boise River between Lucky Peak outfall and Diversion Dam.	Flow Alteration	COLD, PCR, DWS, SRW
012_02	Stewart Gulch, Cottonwood and Crane Creeks source to 3rd order.	Habitat Alteration	Undesignated
012_03	Stewart Gulch, Cottonwood and Crane Creeks, 3rd order to mouth.	Habitat Alteration,	Undesignated
013_02	1st and 2nd order Dry Creek and tributaries.	Unassessed	Undesignated
013_03	3rd order Dry Creek and tributaries.	Unassessed	Undesignated
013_04	4th order Dry Creek.	Unassessed	Undesignated
014_02	Big/Little Gulch Creek Complex.	Unassessed	Undesignated
015_02	1st and 2nd order Dry Creek and tributaries.	Habitat Alteration, Temperature	Undesignated
015_03	3rd order Dry Creek and tributaries.	Habitat Alteration, Temperature	Undesignated
016_02	Big/Little Gulch Creek Complex.	Unassessed	Undesignated
016_03	Big/Little Gulch Creek Complex.	Sediment, DO, Unknown, Nutrients	Undesignated
117_02	1st and 2nd order Sand Hollow Creek and tributaries.	Unassessed	Undesignated
017_03	South Fork Willow Creek.	Sediment, Bacteria, DO, Unknown	MOD*, SCR
017_06	Willow Creek, North Fork Willow Creek, and unnamed tributaries.	Sediment, Unknown, Nutrients, DO	MOD*, SCR

COLD – cold water communities, SC – seasonal cold water communities, WARM – warm water communities, SS – salmonid spawning, PCR – primary contact recreation, SCR – secondary contact recreation, AWS – agricultural water supply, SRW – special resource water, DWS – domestic water supply, MOD* – modified communities (not approved by EPA)

Beneficial uses are protected by a set of criteria, which include narrative criteria for pollutants such as sediment and nutrients and numeric criteria for pollutants such as bacteria, dissolved oxygen, pH, ammonia, temperature and turbidity (IDAPA 58.01.02.250). Figure 5 provides an outline of the stream assessment process for determining support status of the beneficial uses of cold water aquatic life, salmonid spawning, and contact recreation. Table 11 includes the numeric criteria used for reviewing the beneficial use status pertinent to the waters of the Lower Boise River subbasin.



[a] FS = fully supporting, NFS = not fully supporting

[b] SMI = Stream Macroinvertebrate Index, SFI = Stream Fish Index, SHI = Stream Habitat Index

Figure 5. Determination Steps and Criteria for Determining Support Status of Beneficial Uses in Wadeable Streams: Water Body Assessment Guidance, Second Edition (Grafe et al., 2002).

Table 11. Idaho Water Quality Standards, adopted in 2007 (not yet approved by EPA), applicable to the Lower Boise River subbasin.

Designated and Existing Beneficial Uses				
Water Quality Parameter	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Cold Water Aquatic Life**	**Salmonid Spawning (During Spawning and Incubation Periods for Inhabiting Species)**
Water Quality Standards: IDAPA 58.01.02.250				
Bacteria, pH, and Dissolved Oxygen	Less than 126 E. coli/100 ml[a] as a geometric mean of five samples over 30 days; no sample greater than 406 E. coli organisms/100 ml	Less than 126 E. coli/100 ml as a geometric mean of five samples over 30 days; no sample greater than 576 E. coli/100 ml	pH between 6.5 and 9.0 DO[b] exceeds 6.0 mg/L[c]	pH between 6.5 and 9.5 Water Column DO: DO exceeds 6.0 mg/L in water column or 90% saturation, whichever is greater; Intergravel DO: DO exceeds 5.0 mg/L for a one day minimum and exceeds 6.0 mg/L for a seven day average
Temperature[d]			22 °C or less daily maximum; 19 °C or less daily average	13 °C or less daily maximum; 9 °C or less daily average Bull trout: not to exceed 13 °C maximum weekly maximum temperature over warmest 7-day period, June – August; not to exceed 9 °C daily average in September and October
MOD			Seasonal Cold Water: Between summer solstice and autumn equinox: 26 °C or less daily maximum; 23 °C or less daily average	
Turbidity			Turbidity shall not exceed background by more than 50 NTU[e] instantaneously or more than 25 NTU for more than 10 consecutive days.	
Ammonia			Ammonia not to exceed calculated concentration based on pH.	

[a] *Escherichia coli* colony forming units per 100 milliliters
[b] dissolved oxygen
[c] milligrams per liter
[d] Temperature Exemption - Exceeding the temperature criteria will not be considered a water quality standard violation when the air temperature exceeds the ninetieth percentile of the seven-day average daily maximum air temperature calculated in yearly series over the historic record measured at the nearest weather reporting station.
e Nephelometric turbidity units

Current Water Quality Data Sources

A request for data collected during the past five years was made by DEQ to the WAG in March and May of 2008. A compilation of the data received in response to those requests is included in the appendices. Because data collected from any site within the AU may be extrapolated to infer conditions throughout the AU, Tier I data as defined in the WBAG II (Grafe, et al., 2002) is used to make recommendations about future listing status.

Several agencies and point source permit holders collect water quality data from many different locations throughout the subbasin. Table 12 summarizes data collection by agencies involved in regulatory or land management activities, including data collected and reviewed for this report, and Appendix C includes data from those sources. The

WAG contracted with the USGS to collect instantaneous water quality, aquatic biota, and continuous discharge (flow volume) data from six of the 18 control monitoring locations, and four other subbasin locations, to determine compliance with the TMDL in the past five years.

Table 12. Summary of Lower Boise River subbasin data sources used in five-year review, determination of beneficial use attainment and pollutant type.

Assessment Unit (draft 2008 Integrated Report)	Stream Segment Description	Collection Agency	Data Collected	Year
001_02	Unnamed 1st and 2nd order tributaries to the Boise River between Indian Creek and the mouth.	DEQ	Satellite photo image review.	2008
001_06	Boise River 6th order from Indian Creek to the mouth, and tributaries to the 6th order.	[1]DEQ, [2]USGS, [3]ISDA, [4]CB, [5]BOR	[1] BURP data, satellite photo image review. [2] Discharge, nutrients, bacteria, sediment, field parameters, biology. [3] Nutrients, bacteria, sediment, field parameters. [4]Temperature. [5] Bacteria, sediment.	[1]1995, 2008; [2]1939-40, 1950-1973, 1981-83, 1994-2001, 2005; [3]1998-99, 2008, [4]2002-2007; [5]2006
002_04	Indian Creek 4th order from Phyllis Canal to mouth.	[1]DEQ, [2]USGS, [3]ISDA, [6]CN	[1] Satellite photo image review. [2]Discharge, nutrients, bacteria, sediment, field parameters. [3]Nutrients, bacteria, sediment, field parameters. [6] Nutrients, bacteria, sediment, field parameters.	[1]2008; [2]1981-2007; [3]1998-99, 2008, [6]2003-2008
003_02	North Indian Creek, 1st and 2nd order.	DEQ	Satellite photo image review	2008
003_03	Indian Creek 3rd order, upstream of Sand Creek.	DEQ	[1]BURP data, satellite photo image review. Nutrients, bacteria, sediment, field parameters.	[1]1996-7, 2004, 2008
003a_04	Indian Creek 4th order from Sand Creek to Phyllis Canal.	[1]DEQ,	1BURP data, satellite photo image review. [2] Discharge, nutrients, bacteria, sediment, field parameters.	[1]1995, 1997, 2003-04; 2008;
005_02	1st and 2d order unnamed streams or tributaries to the Boise River from Glenwood Bridge to Mason Creek.	DEQ	Satellite photo image review.	2008
005_06	Boise River 6th order, from Glenwood Bridge to Mason Creek and tributaries to 6th order.	[1]DEQ, [2]USGS, [3]ISDA, [4]CB, [5]BOR	[1]BURP data, satellite photo image review. Nutrients, bacteria, sediment, field parameters. [2]Discharge, nutrients, bacteria, sediment, field parameters, biology. [3]Nutrients, bacteria, sediment, field parameters. [4] Temperature. [5]Bacteria, sediment.	[1]1995, 2008; [2]1971-2003; [3]2001-2008; [4]1999-2008; [5]2006

Assessment Unit (draft 2008 Integrated Report)	Stream Segment Description	Collection Agency	Data Collected	Year
006_02	Mason Creek source to mouth.	[1]DEQ, [2]USGS, [3]IDA	[1]BURP data. [2]Nutrients, bacteria, sediment, field parameters. [3] Nutrients, bacteria, sediment, field parameters.	[1] 2003; [2]1994-2001, 2005; [3]1998-1999, 2008
007_02	Fifteenmile Creek, 1st and 2nd order and tributaries	DEQ	Satellite photo image review.	2008
007_04	Fifteenmile Creek, 3rd order and tributaries to mouth	[1]DEQ, [2]USGS, [3]ISDA	[1]Satellite photo image review. [2]Discharge, temperature, nutrients, bacteria, sediment, field parameters. [3]Nutrients, bacteria, sediment, field parameters.	[1]2008, [2]2005, [3]1998-1999
008_02	1st and 2nd order tributaries to Tenmile Creek.	DEQ,	Satellite photo image review.	2008
008_03	Tenmile Creek	[1]DEQ, [2]USGS, [3]ISDA	[1]BURP data. [2]Nutrients, bacteria, sediment, field parameters. [3] Nutrients, bacteria, sediment, field parameters.	[1]1996-7; [2]1994-2001, 2005; [3]1998-1999
009_02	Blacks Creek 1st and 2nd order.	DEQ	BURP data, satellite photo image review.	1996, 1998, 2008
009_03	Blacks Creek 3rd order.	DEQ,	BURP data, satellite photo image review.	1998, 2008
010_02	Fivemile Creek 1st and 2nd order	DEQ,	BURP data, satellite photo image review.	1998, 2008
010_03	Fivemile Creek 3rd order.	[1]DEQ, [2]USGS, [3]ISDA	[1]BURP data, satellite photo image review. [2]Nutrients, bacteria, sediment, field parameters. [3]Nutrients, bacteria, sediment, field parameters.	[1]1996, 2003, 2005, 2008; [2]2000-01, 2005; [3]1998-1999
011a_02	1st and 2nd order tributaries to Boise River from Barber Dam to Glenwood Bridge.	DEQ	Satellite photo image review.	2008
011a_06	Boise River from Barber Dam to Glenwood Bridge.	[1]DEQ, [2]USGS, [4]CB, [5]BOR	[1]Satellite photo image review. [2]Discharge, temperature, nutrients, bacteria, sediment, field parameters, biology. [4]Temperature. [5]Sediment, bacteria, field parameters.	[1]2008; [2]1981, 1995-2004, 2005; [4]2002-2007; [5]1998, 2006
011b_02	1st and 2nd order streams and tributaries near outfall of Lucky Peak Dam.	DEQ	Satellite photo image review.	2008
011b_06	Boise River between Lucky Peak outfall and Diversion Dam.	[1]DEQ, [2]USGS, [5]BOR	[1]Satellite photo image review. [2]Discharge, biology. [4]Continuous temperature. [5]Sediment.	[1]2008; [2]1986-1994, 2002-4, 2006; [4]2003-2007, [5]2002

Assessment Unit (draft 2008 Integrated Report)	Stream Segment Description	Collection Agency	Data Collected	Year
012_02	First and second order Stewart Gulch, Cottonwood and Crane Creeks.	DEQ	BURP data, satellite photo image review.	1996, 2008
012_03	Stewart Gulch, Cottonwood and Crane Creeks from 3rd order to the mouth.	[1]DEQ, [2]USGS	[1]BURP data, satellite photo image review. [2]Discharge.	[1]1996, 2008; [2]2002-2008
013_02	Unnamed tributaries to Dry Creek.	[1]DEQ, [3]ISDA	[1]Satellite photo image review. [3]Nutrients, bacteria, sediment, field parameters.	[1]2008; [3]2008
013_03	3rd order Dry Creek and tributaries.	DEQ	Satellite photo image review.	[1]2008
013_04	4th order Dry Creek and tributaries.	DEQ	Satellite photo image review.	[1]2008
014_02	Big and Little Gulch complex	DEQ	Satellite photo image review.	[1]2008
015_02	1st and 2nd order Willow, North Fork Willow, South Fork Willow Creeks and tributaries	DEQ	BURP data, satellite photo image review.	[1]1996, 2004-5, 2008
015_03	3rd order Willow Creek, North Fork Willow Creek, and tributaries.	[1]DEQ, [3]ISDA	[1]BURP data, satellite photo image review. [3]Nutrients, bacteria, sediment, field parameters.	[1]1996, 2008; [3]2008
016_02	Langley/Graveyard Gulch complex, unnamed streams.	DEQ	Satellite photo image review.	2008
016_03	Langley/Graveyard Gulch complex, unnamed streams.	[1]DEQ	[1]BURP data, satellite photo image review, nutrients, sediment, bacteria, field parameters.	[1]1996, 2008
017_02	Sand Hollow Creek (Payette River system) D-line, Farmers, Sebree, and Notus Canals and unnamed streams	DEQ	Satellite photo image review.	2008
017_03	Sand Hollow Creek 3rd order and tributaries.	[1]DEQ	[1]BURP data, satellite photo image review, nutrients, sediment, bacteria, field parameters.	[1]1996, 2006, 2008
017_06	Sand Hollow Creek, 6th order and tributaries.	[1]DEQ, [3]ISDA	[1] Satellite photo image review. [3]Nutrients, bacteria, sediment, field parameters.	[1]1996, 2008; [3]1998-9, 2008

[1] Department of Environmental Quality (DEQ), [2] United States Geological Survey (USGS), [3] Idaho State Department of Agriculture (ISDA), [4] City of Boise (CB), [5] Bureau of Reclamation (BOR), [6] City of Nampa (CN).

Changes to Subbasin Characteristics

Previous studies predicted continued population growth in the subbasin (USACE, 1995), which has effected transitions in land use from agricultural to urban/suburban in all watersheds of the subbasin. Ada County has experienced more land use conversion than other counties, but all counties have more acres of urban/suburban land use now than in 2001.

A Use Attainability Analysis (UAA) of tributaries and drains in the subbasin was conducted in 2002 and requests were submitted to EPA for approval to modify the designated use of some tributaries and drains in the subbasin. EPA approved the revision of recreation use designations for Indian, Mason, Sand Hollow, Fivemile, Tenmile and Fifteenmile Creeks from primary to secondary contact recreation. Because the WAG developed the TMDL and implementation plan to comply with geomean bacteria criteria, the revision from PCR to SCR use designation did not change the TMDL target and LAs, which remain at 126 cfu/100mL of *E. coli*.

Pollution Source Review

This report includes a review of identified or observed sources of impairment to surface water in the subbasin, including permitted point sources, nonpoint sources, natural events and documented or otherwise known accidental releases. The EPA published a new Multi Sector General Permit (2008 MSGP) on September 29, 2008 to replace the 2000 MSGP. This permit covers industrial facilities where EPA has NPDES authority, such as the Lower Boise River subbasin. The 2008MSGP applies to all new and existing facilities and requires that stormwater be controlled in accordance to the permit. The permit can be accessed at: http://cfpub.epa.gov/npdes/stormwater/msgp.cfm. An online database scheduled to be active after February 12, 2009 will allow the public to access information on the MSGP entities under EPA's authority. This database can be accessed at: http://cfpub.epa.gov/npdes/stormwater/enoi.cfm.

In response to an anticipated change in standards for recreational uses, the WAG sponsored a study to identify sources of bacteria pollution in the subbasin by identifying fecal coliform DNA. The DNA study resulted in identifying approximately 70% of the sources of bacteria in the subbasin (e.g. human, cattle, horse, bird, dog and cat) and determining the proportion of controllable sources (those that can be controlled by humans) (LBRWQP, 2003).

Point Sources

Permitted point sources in Ada and Canyon counties, retrieved from the EPA website and summarized in Table 13 and Figure 6, are easy to identify and are required to meet all permit conditions. Details regarding the permitted facilities can be queried from the EPA web site: http://www.epa.gov/enviro/index.html. Recent federal requirements for cities and construction sites to develop and implement stormwater control systems, and to apply for NPDES permits which require implementation of BMPs for stormwater control on construction sites, have facilitated reductions in sediment loads from those sources in the past five years. EPA has recently published a draft guidance document, *TMDLs to Stormwater Permits Handbook: Draft* (2008) to assist in the development of TMDLs

with identified stormwater sources for certain pollutants. This guidance draft can be accessed from http://www.epa.gov/owow/tmdl/pdf/tmdl-sw_permits11172008.pdf.

Data collected from five locations in the Boise region for the Boise City Municipal Storm Water NPDES Permit is published annually by the Ada County Highway District (ACHD). The sample locations are in AUs 005_02, 010_02 and 011a_06, and analytical samples are collected from stormwater effluent, not the stream channel. Although there are numerous construction NPDES permits in Ada and Canyon counties, they are not included in Table 13 because they are required to keep stormwater on site and are temporary in nature.

Table 13. NPDES-permitted point sources in the Lower Boise River subbasin, as of March 2008.

Sewage Treatment Facilities				
Canyon County				
Longitude	**Latitude**	**Facility**	**Receiving Water**	**Permit #**
116.42315	43.42095	MS4[1] City of Caldwell*	Indian and Mason Creeks	IDS028118*
116.70269	43.677277	City of Caldwell WWTP[2]	Boise River and Indian Creek	ID0021504
116.687778	43.669444	Darigold, Caldwell	Boise River	ID0024953
116.4014	43.4015	Petroleum tanks	Indian Creek	ID0027383
116.81469	43.726888	City of Notus	Boise River, through Conway gulch	ID0021016
116.95958	43.786777	City of Parma	Sand Hollow Creek	ID0021776
116.49222	43.605833	Sorrento Lactalis cheese plant-Nampa	Boise River, through Rachel and Purdam Drain	ID0028037
116.58197	43.598111	City of Nampa WWTP	Indian Creek	ID0022063
116.638	43.696694	City of Middleton WWTP	Boise River	ID0021831
116.815443	43.669816	City of Greenleaf WWTP	Boise River	ID0028304
116.909467	43.677182	City of Wilder	Undisclosed	ID0020265
116.52388	43.576944	Swift and Company Beef	Indian Creek	IDG10028
116.70888	43.702777	Caldwell Housing Authority	Sebree Canal	ID0025453
Ada County				
Longitude	**Latitude**	**Facility**	**Receiving Water**	**Permit #**
		**City of Boise MS4	Boise River	IDS027561
116.33127	43.67175	City of Boise WWTP	Boise River	ID0023981
116.24419	43.638888	City of Boise WWTP	Boise River	ID0020443
116.22127	43.614666	City of Boise Geothermal-	Boise River	ID0025488
		City of Kuna	Indian Creek	pending
		City of Eagle	Boise River	pending
		Avimor Community	Boise River	pending
		Garden City	Boise River	pending
116.2619	43.382	City of Meridian WWTP	Fivemile Creek and Boise River	ID0020192
116.4	43.591666	Roaring Springs Water Park	Tenmile Creek	ID0027952
116.4975	43.687111	City of Star WWTP	Lawrence-Kennedy Canal	ID0023591
Animal Feeding Operations				
Canyon County				
116885409	43.844588	Boise Valley Feeders	Black Canyon Canal	IDG010079
116.7435	43.836142	Choutchourrou's Dairy	Undisclosed	IDG010162
116.593316	43.422067	Chuck DeGroot	Undisclosed	IDG010160
		Clarence Verdersteldt and Sons	Indian Creek, through Mora Canal	IDG010099
116.71306	43.69214	Diamond A Facility	Undisclosed	IDU000059
116.87205	43.743333	Ed Johnson Farms	Undisclosed	IDU000062
116.563033	43.380937	Melba Feedlot	Undisclosed	IDU000170

116.934277	43.88995	VL Feedlot	Undisclosed	IDU000186
116.999185	43.792139	River Ranch Feedlot	Undisclosed	IDU000187
-116.961587	43.793424	Fort Boise Cattle Company	Undisclosed	IDU000054
117.012243	43.776033	Van Vliet Dairy Farm	South Boise Drain	IDG010096
116.55297	42.533611	Idaho Fish and Game	Wilson Springs	IDG130042
		M & M Feedlots	Undisclosed	IDU000063
		McKenzie Feedlot	Boise River, through Notus Canal	IDG010074
116.592799	43.42203	Mooriah Dairy	Boise River, through Mora Canal	IDG010084
116.729042	43.735505	Niman Ranch Cattle	Undisclosed	IDU000171
116.503537	43.55267	Shulerlane Farms, Inc.	Indian Creek	IDG010093
		Simplot Feedlot #3	Boise River	IDG010027
116.58805	43.600555	Simplot Meat Packing Plant	Indian Creek	ID0026964
116.893741	43.81011	T & T Cattle	Black Canyon Canal	IDG010111
		Nicholson Feed Lot	Undisclosed	IDU000058
116.66194	43.760833	Vandenberg Dairy	Undisclosed	IDG010163
116.539671	43.329364	Animal Feeding Operation	Undisclosed	IDU000173
116.673127	43.663715	Beef Cattle Feedlot	Undisclosed	IDU000172
116.712905	43.504629	Beranna Dairy	Mora Canal	IDG010091
		Snake River Farms	Snake River	IDG010140
		Stephens and Sons	Undisclosed	IDU000064
		Norman Vermeer	Undisclosed	IDU000002
Ada County				
116.453811	43.422881	Carousel and Syringa Farms	Waldvogel Canal	IDG010083
116.473499	43.479977	Dairy	Vanduzer lateral	IDG010092
116.453636	43.553375	Van Grouw Dairy	Mason Creek	IDG010097
116.439921	43.422848	Double OO Dairy	Undisclosed	IDG010101
		Dudley Ranch, Star	Boise River	IDU000082
116.333814	43.424104	Van Grouw Dairy	Indian Creek	IDG010098
		Friesian Dairy	Indian Creek	IDG010081
116.434254	43.721008	Beacon Light Road	Indian Creek	IDG010066
		Idaho Feedlot	Undisclosed	IDU000040
116.453604	43.474573	Morford Farms	Undisclosed	IDU000201
Longitude	**Latitude**	**Facility**	**Receiving Water**	**Permit #**
116.294403	43.530614	Murgoittio Dairy	New York Canal	IDG010308
116.433479	43.422789	Silver Butte Holsteins, Inc.	Undisclosed	IDG010130
116.503708	43.48848	Bochsma Dairy	Indian Creek and Boise River	IDG010135
		Stillwell 117 Ranch-Feedlots	Undisclosed	IDU000057
116.471092	43.422932	Sundance Dairy	Waldvogel Canal	IDG010103
		Thornton Hog Farm	Undisclosed	IDU000056
116.413774	43.467902	Vandersteldt Dairy	Undisclosed	IDG010095

[1] MS4 – Municipal Multi-Sector Stormwater Facility
[2] WWTP – wastewater treatment plant
* Not Final
**Includes ACHD, BSU, ITD, and Garden City as co-permitees

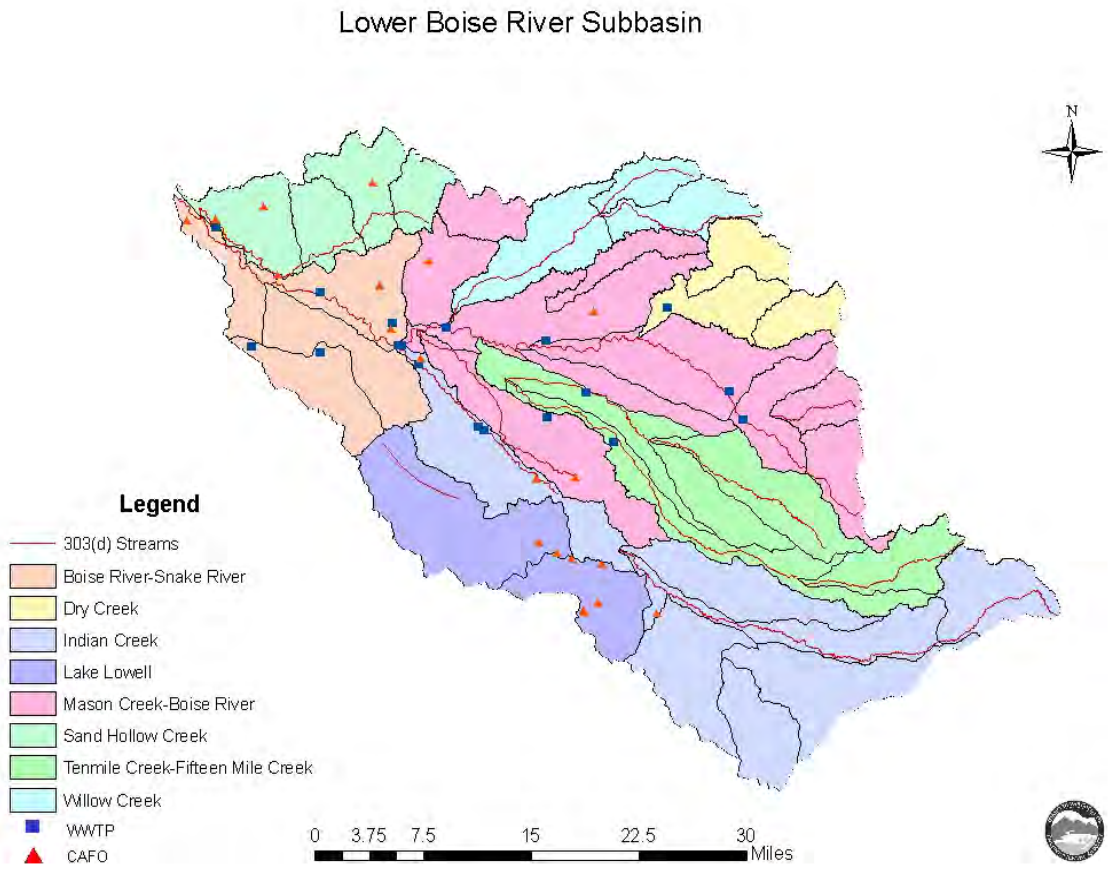


Figure 6. Permitted point sources (wastewater treatment plants and confined animal feeding operations) in Lower Boise River subbasin as reported on the EPA Web site of NPDES permits in May 2008.

Nonpoint Sources

The TMDL identified nonpoint sources as primary contributors of sediment and bacteria pollution in the subbasin. Population growth in the subbasin since the TMDL was written has continued at a consistent rate, as predicted by the ACOE (1995), of 2 to 3% per year with the suburban regions experiencing the most significant change in land use from agricultural to urban. Because urban/suburban sources are regulated through permit instruments those sources contribute proportionately less sediment and bacteria pollution. In 2005, the Ada County Soil Conservation District estimated that 17 mi^2 were converted from agricultural to urban land use in Ada County between 2001 and 2004 (Koberg, 2008).

While the locations of agricultural diversions and drains can be indicated as specific points on the landscape, the CWA designates these as nonpoint sources due to the impact that widespread land use activities have on the water channeled through canal systems.

Septic systems are discussed in the 2003 implementation plan for the Lower Boise River TMDL and are considered a small contributor of nonpoint source pollution in the subbasin.

Natural Events

Wildland fires, intense rainstorms, rain-on-snow events and similar infrequent and isolated, but high-impact, events occur in the subbasin and have been observed to have an acute negative effect on water quality. During the past five years, no events of significance occurred in the Lower Boise River subbasin.

Flow and Habitat Alteration

Initially, flow and habitat modifications in the subbasin were an indirect result of ore mining in the Upper Boise River subbasin. As mining camps expanded, the demand for food spurred the growth of agriculture in the Lower Boise River, leading to the development of reservoirs and canal systems as early as 1872 (ISHS, 1993). With the expansion of the territories of the United States, federal agencies were created and tasked with the responsibility for flood control and irrigation systems.

The US Bureau of Reclamation (BOR), created in 1902 to develop and manage irrigation projects, is the responsible agency for managing water flow in the lower Boise River subbasin. All existing canals and irrigation systems were incorporated into the BOR-managed project. The agency negotiates contracts with water districts, water user associations and other federal agencies to operate the water systems.

Dams and diversions currently remove an average of 5,200 cubic feet per second (cfs) from the mainstem river during the irrigation season for allocated uses as described in The Boise Project (US BOR, 1997). The portion of diverted water that is not consumed (59%) is returned to the mainstem at multiple locations between the city of Star and the mouth.

Summary of Analysis of Current Water Quality Data

Since the TMDL was approved, DEQ has collected data, requested data from other agencies and organizations, and searched other agency databases, university publications and municipal or regional resource management plans for additional and recent water quality data. The results of that effort are compiled in this review and recommendations for future action and Integrated Reports is based on that data. The remainder of this section will address water quality data for criteria related to beneficial uses, pollutants, or impairments in the Lower Boise River subbasin that are addressed by an approved TMDL or used by Idaho as a standard for water quality.

Pollutants of concern for this review are limited to constituents for which numeric criteria are established in Idaho WQS, and that have been identified as current or potential limiting factors for attainment of designated, existing, or presumed beneficial uses in the Lower Boise River subbasin. Those constituents are sediment, bacteria, temperature, DO, pH and ammonia.

Sediment

Sediment concentrations are used as a surrogate measure to determine attainment of SS and COLD beneficial uses. The TMDL established a dual maximum target suspended sediment concentration (SSC or TSS) for the Boise River of 80 mg/L for 14 days and 50 mg/L for 60 days from February through September. The target concentration applies to the mainstem river at any location and two locations (Middleton and Parma) were

identified as control monitoring locations. LAs were also established for 15 drains and tributaries using a mass balance-derived load reduction target of a 37% reduction from 1992 loads. For the purpose of determining TMDL attainment, data is compared to the concentration targets (50 mg/L or 80 mg/L) in the mainstem and data is compared to the current state standard (Table 11) and LAs for the tributaries. The TMDL allocated 3.62 tons/day as a reserve for growth.

Subbasin assessments were completed for major tributaries in the Lower Boise River subbasin in 2001. Sediment was discussed in relation to salmonid spawning uses, but as none of the tributaries are designated for the beneficial use of salmonid spawning and the uses do not exist, cold-water aquatic life (COLD) beneficial uses are the most sensitive designated or presumed use for the tributaries. The surrogate WQS (Figure 11) for sediment that applies to COLD beneficial uses is turbidity. The relationship between suspended sediment and turbidity is explained in several reports (Downing, 2008; USGS, 2001; Lewis, 1996) and can be used along with other observations to determine use support. Ultimately, the determining factor for impairment due to sediment pollution is beneficial use attainment. Use attainment decisions are based on an evaluation of water chemistry data, BURP habitat assessments scores, and observation of conditions present within an AU. Current WQS use turbidity (Figure 11) as a surrogate measure for sediment, and to the extent that published research provides valid methods for correlating turbidity with SSC, it is possible to determine sediment impairment in some Lower Boise River tributaries.

Instantaneous SSC or total suspended sediment (TSS) data has been collected at both mainstem control locations and 7 drain and tributary locations during the past five years. Reported data is compared to the TMDL targets in Figure 7, Figure 8 and Figure 9. At most mainstem river locations, except for Parma (AU 001_06), the TMDL sediment targets are met.

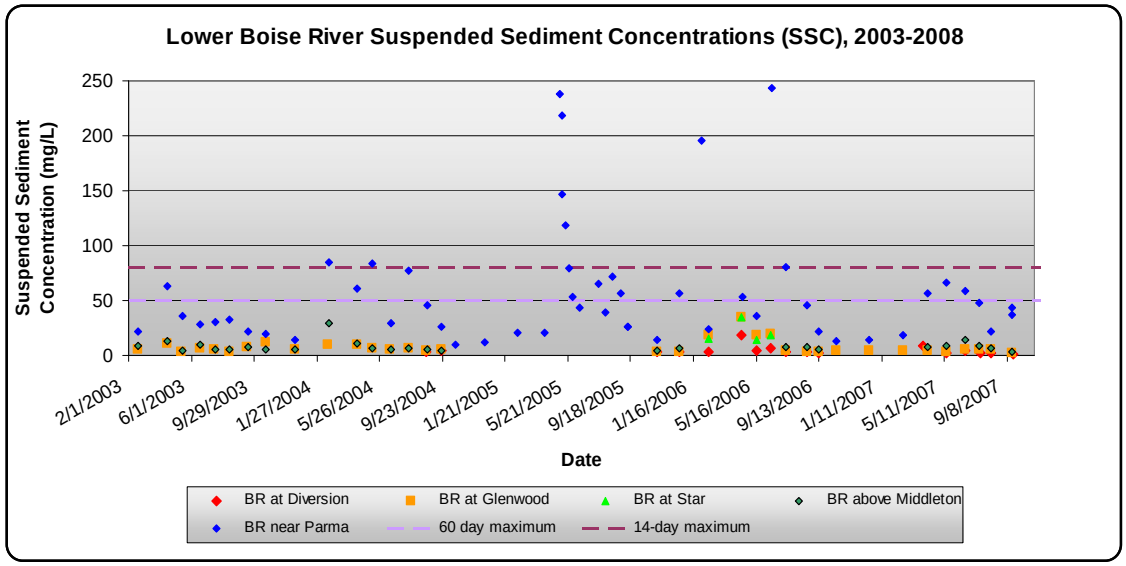


Figure 7. Graph of suspended sediment concentration (SSC) from USGS gage locations on the Boise River, 2003-2008.

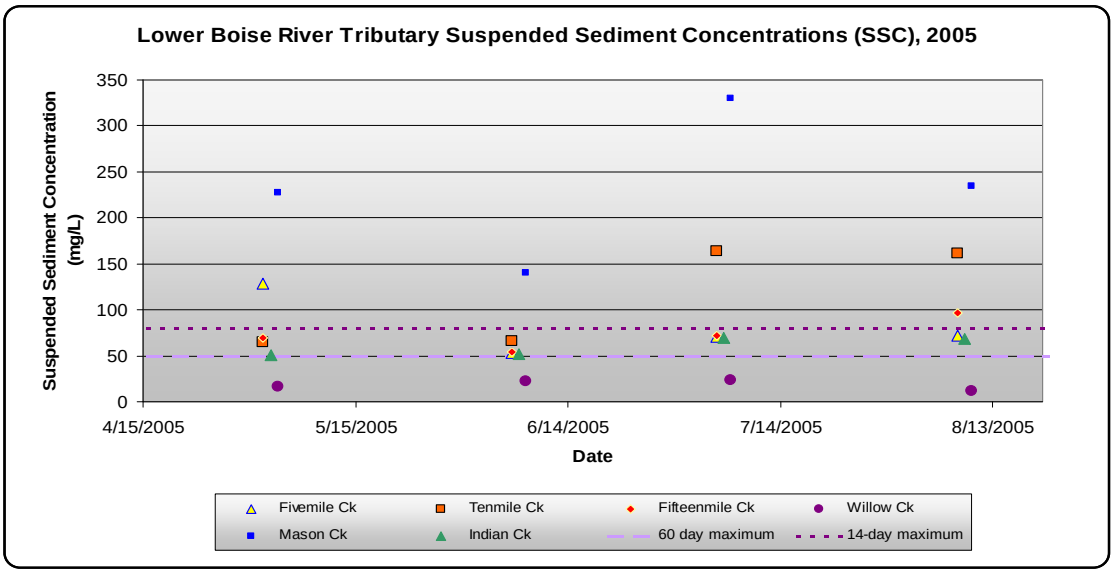


Figure 8. Graph of suspended sediment concentration (SSC) from tributary locations near the confluence with the Boise River, 2005.

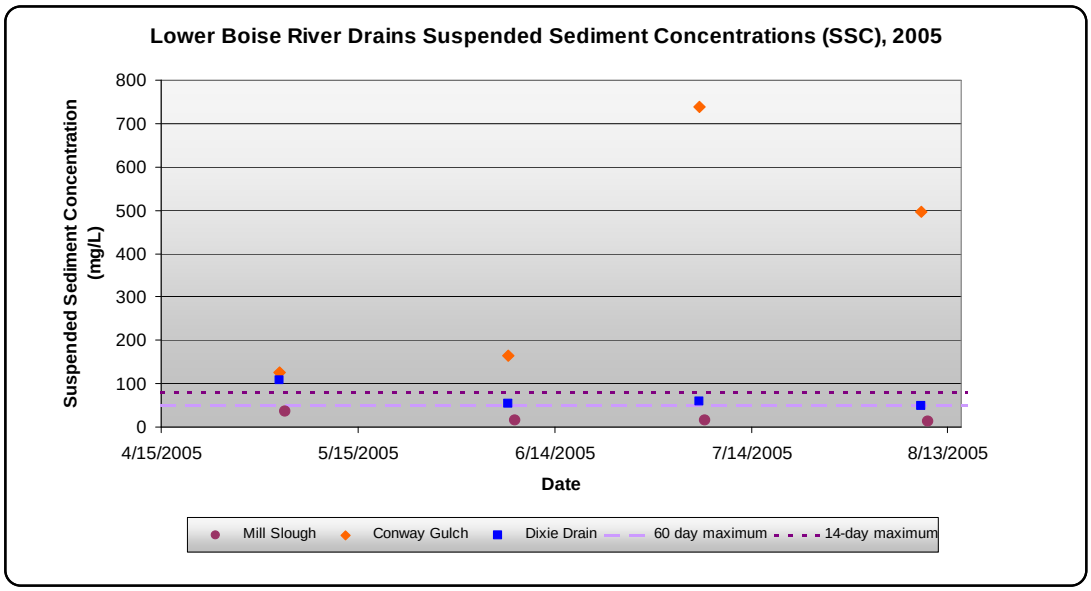


Figure 9. Graph of suspended sediment concentration (SSC) from drains near the confluence with the Boise River, 2005.

Figure 8 and Figure 9 represent data collected from tributaries and drains near the confluence with the mainstem. Of the sampled tributaries to the Lower Boise River, Willow Creek (AU 015_03) is the only tributary that does not appear to exceed turbidity criteria or TMDL sediment targets. Of the three drains sampled in 2005, only Mill Slough (AU 005_06) appears to be within turbidity criteria or TMDL targets. It is not possible to determine sediment trends in the basin, given the limited data for this constituent. However, based on a review of the available data, AUs 002_04 (Indian Creek), 006_02 (Mason Creek), 007_04 (Fifteenmile Creek), 008_03 (Tenmile Creek),

010_03 (Fivemile Creek), 017_03 (Sand Hollow Creek) contribute sediment concentrations to the Boise River that exceed TMDL mainstem targets. It is possible that apparent sediment impairment in Fifteenmile Creek is a result of loads contributed from Fivemile and Tenmile Creeks, each of which is in a unique AU.

Sediment data collected from some LA control monitoring locations in 2008 was compared to the TMDL target loads (Table 14). At locations where TMDL sediment LAs were met, the data was then compared with other data from the appropriate AU to determine if beneficial use attainment had been met throughout the AU. While some LA control locations appear to have met TMDL sediment targets, data collected from other locations (East and West Hartley Gulch and Thurman Drain) in 2005 and 2008 indicate that AU 005_06 is still contributing sediment in concentrations likely to exceed turbidity criteria and that exceed TMDL allocations to the Boise River.

Table 14. Load analysis of suspended sediment (SSC or TSS) data collected at some Lower Boise River subbasin TMDL Load Allocation (LA) locations in 2008.

Control Location	AU	Date	Discharge (cfs)	Average Concentration (mg/L)	Coefficient	Load Tons/day	TMDL Target Tons/day
Eagle Drain	005_06	2000	17.675	23.25	0.0027	1.11	1.61
Thurman Drain	005_06	2008	56.4	9.3	0.0027	1.42	0.34
Fifteenmile Creek	007_04	2005	81.75	73	0.0027	16.11	18.02
Star Feeder	005_06		No data	No data		No data	1.73
Long Feeder	005_06		No data	No data		No data	0.35
Watts Creek	005_06		No data	No data		No data	0.28
Mill Slough	005_06	2005	102.5	19.25	0.0027	5.33	7.08
Willow Creek	015_03	2005	26	18.5	0.0027	1.30	2.28
Mason Slough	006_02	2005	4.8	107.75	0.0027	1.40	1.2
Mason Creek	006_02	2000	120.5	230.3	0.0027	74.93	21.48
E. and W. Hartley Gulch	005_06	2005	51	45.5	0.0027	6.27	5.31
E. and W. Hartley Gulch	005_06	2008	26.43	367.37	0.0027	26.22	5.31
Indian Creek	002_04	2005	47.5	60.25	0.0027	7.73	5.74
Conway Gulch	001_06	2005	32	231.9	0.0027	20.04	7.14
Dixie Drain	001_06	2005	197	67.75	0.0027	36.04	25.91

Access to the confluence of tributaries and drains in the subbasin is difficult, and access does not ensure that data collection is possible, so DEQ reviews data from multiple sources, including remote data such as satellite imagery, to determine compliance with criteria and TMDLs. Satellite images are not difficult or expensive to obtain and can provide information at a glance to determine whether sediment loads are entering streams. The images in Figure 10 were obtained from Google Earth in March 2008 and metadata from Google Earth state that the coverage for the region of interest was collected in 2006. It is evident that sediment plumes from specific drains and tributaries in the Lower Boise River subbasin contribute significant sediment and effluent loads (not related to WWTPs) to the Boise and Snake Rivers, as seen in the images in Figure 10.



Sediment plume at Sand Hollow Creek confluence with the Snake River.



Effluent (not from WWTP) plume at Indian Creek confluence with the Boise River.



Sediment plume at Conway Gulch confluence with the Boise River.



Effluent (not from WWTP) plume at East and West Hartley Gulch confluence with the Boise River.



Sediment plume at Fifteenmile Creek confluence with the Boise River.

Figure 10. Satellite images of sediment plumes from drains and tributaries in the Lower Boise River subbasin. Images collected from Google Earth, March 2008.

Another way to analyze the behavior of suspended sediment in the Lower Boise River subbasin is to develop sediment load duration diagrams to analyze sediment concentrations at all flow stages. Load duration diagrams for a pollutant of concern are developed by plotting the data and numeric water quality targets on flow duration curves.

A flow duration curve is a graphical depiction of the frequency of specific flow rates using cumulative flow data over a specific period of time. Flow duration curves represent the probability of a certain flow volume being exceeded as a percent of time flow values have been equaled or exceeded in the past. High flows in the Lower Boise River subbasin are depicted between the zero and tenth percentile; moist conditions are between the tenth and 40th; mid-range flow is between the 40th and 60th; dry conditions are between the 60th and 90th; and low flows are between the 90th and 100th percentile. In most natural systems, low flows are exceeded a majority of the time and peak flows are exceeded infrequently.

Load duration diagrams can reveal patterns of impairment, the response of a pollutant across all flow conditions, and data gaps. Loads from point sources usually plot on duration or probability diagrams as an increase during low flows, while loads from nonpoint sources usually follow the natural flow pattern--increasing during higher flows. Figure 11 depicts the load duration diagram for suspended sediment at the TMDL control

monitoring location near Middleton. Because there are no data points for suspended sediment at the lowest and highest flow conditions, it is not possible to determine a pattern of behavior for suspended sediment at those flow conditions. However, with the limited data available, it appears that nonpoint sources contribute to suspended sediment loads at this location of the mainstem river.

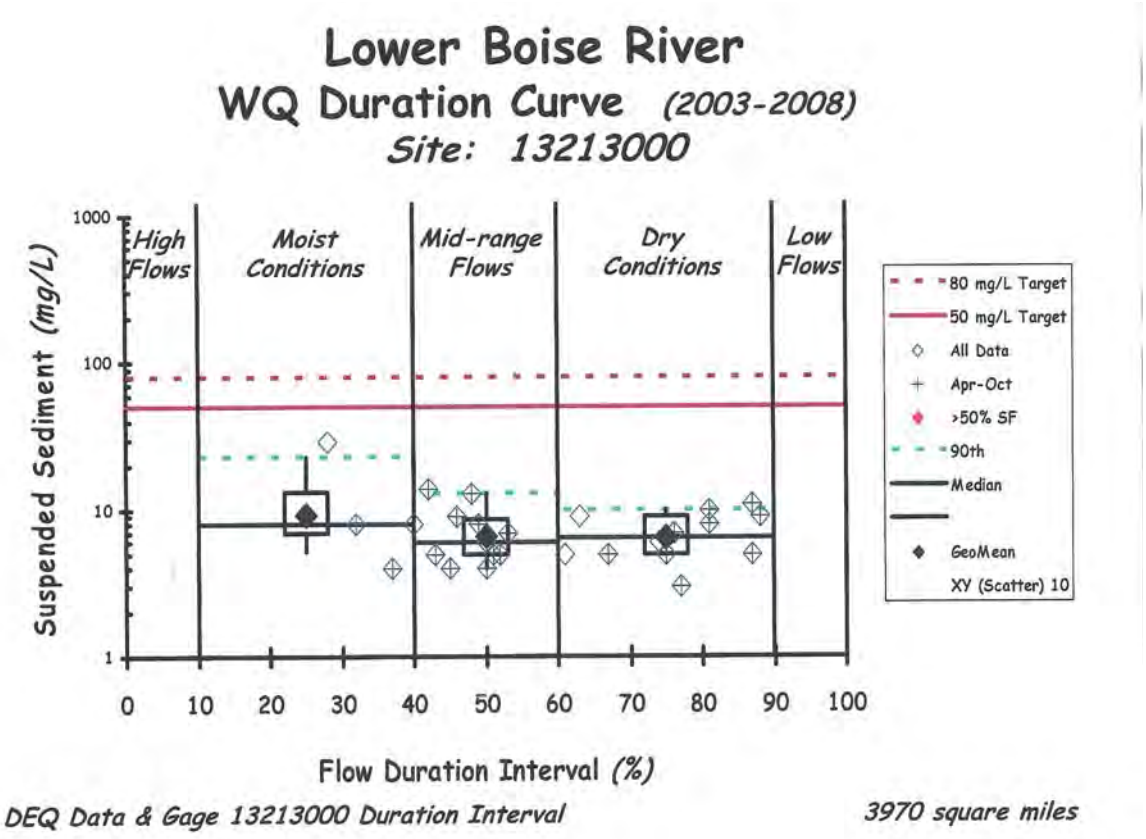


Figure 11. Sediment Load Duration Diagram from Lower Boise River TMDL Control Monitoring Location, Boise River near Middleton, 2003-2008.

Data collected from some WLA control monitoring locations in 2008 was compared to the TMDL target loads. Notus is the only location where the WLA described in the TMDL was not met, based on an evaluation of data from 2008.

Table 15. Load analysis of suspended sediment, data collected at Lower Boise River subbasin TMDL WLA locations in 2008.

Control Location	AU	Date	Discharge (cfs)	Average Concentration (mg/L)	Coefficient	Load Tons/day	TMDL Target Tons/day
Lander	011a_06	5/2008	20	0.8	0.0027	0.04	17
Meridian	005_06	5/2008	4.9	2	0.0027	0.03	.355
Boise West	005_06	5/2008	33	5.4	0.0027	0.04	3.1
Middleton	005_06	5/2008	0.428	37	0.0027	0.04	0.535
Nampa	005_06	5/2008	10.29	6	0.0027	0.17	1.5
Caldwell	001_06	5/2008	5.18	8	0.0027	0.11	1.0625

Control Location	AU	Date	Discharge (cfs)	Average Concentration (mg/L)	Coefficient	Load Tons/day	TMDL Target Tons/day
Star	005_06	5/2008	0.633	7	0.0027	0.01	0.0965
Notus	001_06	2/2008	0.546	36	0.0027	0.05	0.0165

The city of Nampa collects total suspended solids (TSS) samples from Indian Creek (AU 002_04) in compliance with the WWTP point source NPDES permit and results of sample analysis is represented in Figure 12. Based on the data provided for this review, the WWTP meets the TMDL sediment targets. In most cases, the WWTP effluent does not significantly alter the concentration or load of sediment in this AU (002_04), and in a few instances the discharge may be serving to dilute higher concentrations of sediment upstream of the WWTP.

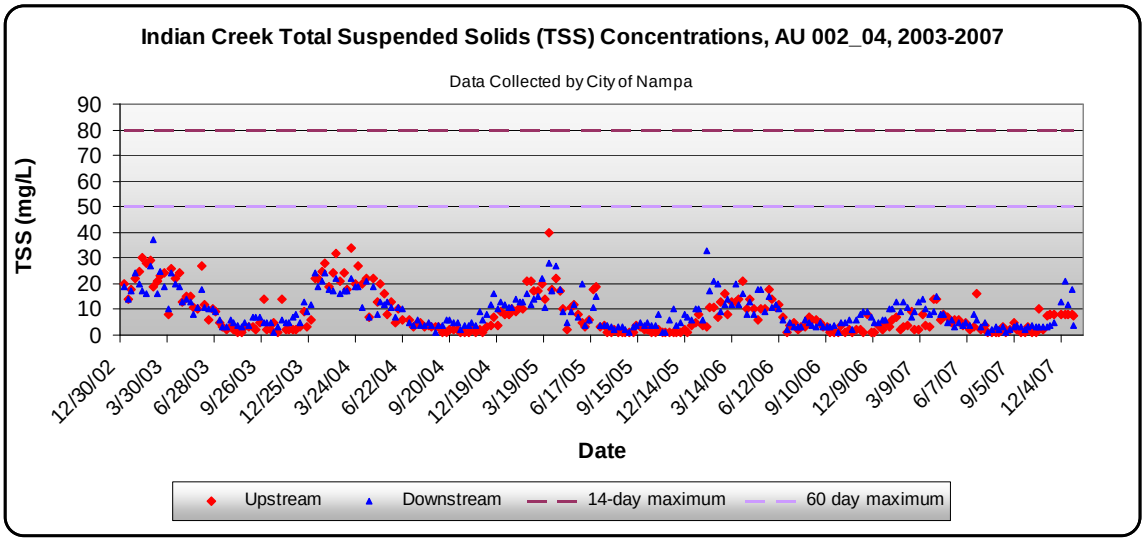


Figure 12. Graph of total suspended solids (TSS) concentration data from Indian Creek (AU 002_04) near the wastewater treatment plant (WWTP) in Nampa, 2003-2007.

Bacteria

Bacteria concentrations are used as a surrogate measure to evaluate attainment of contact recreation designated uses. Primary contact recreation (PCR) is a year-round designated beneficial use of the Lower Boise River and the TMDL compliance locations are the USGS gage locations at Glenwood Bridge, Middleton and Parma. Because the TMDL determined that some locations in the subbasin required more than a 90% reduction in loads the WAG applied for grant funds to conduct a study to determine the proportion of contributing sources throughout the subbasin. A copy of a bacteria DNA ribo-typing study (LBRWQP, 2003) is available at http://www.lowerboisewatershedcouncil.org/05_water-quality/sed-bacteria/dna_test/DNA_Rpt_Final.pdf.

Even though approximately 30% of the DNA was from source(s) that were not identifiable using the study methods, it was determined that controllable sources of

bacteria represent 27 to 56% of the load in the Lower Boise River subbasin, with humans, livestock and pets contributing the largest fraction of bacteria (LBRWQP, 2003). The TMDL selected maximum geomean concentrations at the control monitoring locations as the target for compliance determination. The city of Boise collected data to calculate bacteria geomean concentrations from the Glenwood control location in 2003 and 2004 (Figure 13), and from the Middleton (Figure 14) and Parma (Figure 15) control locations in 2005. Data from additional mainstem river locations in AUs 011a_06, 005_06 and 001_06 was also collected. The geomean and instantaneous data indicate that in all AUs sampled bacteria TMDL targets and state standards for PCR have been exceeded several times in the past five years.

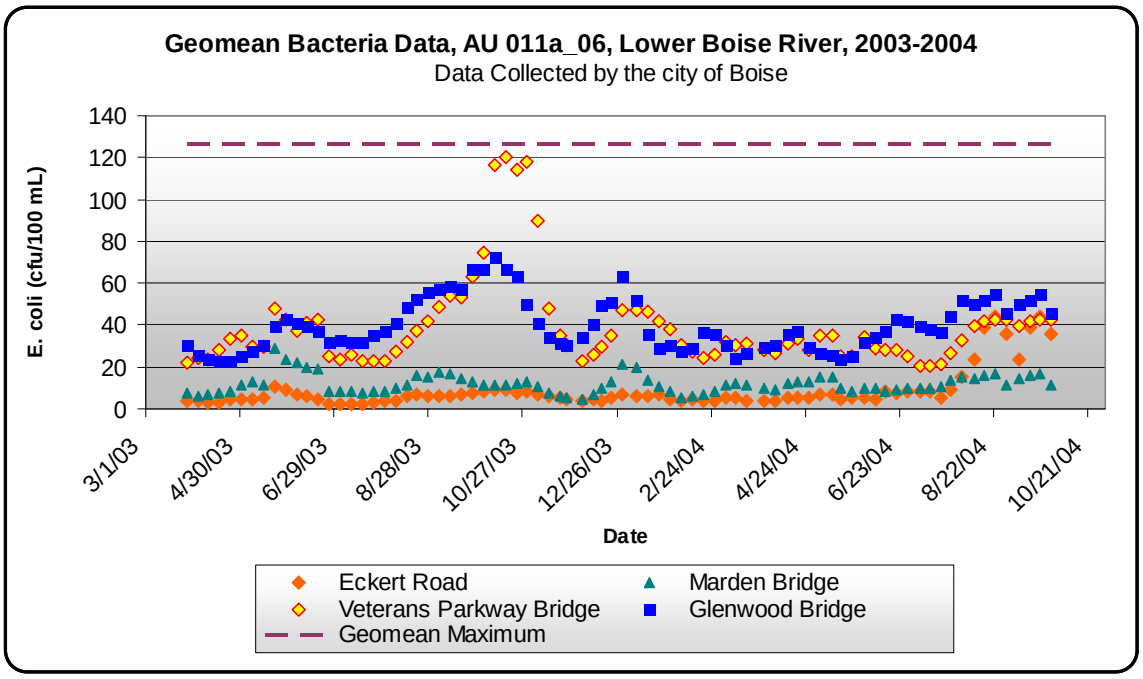


Figure 13. Geomean Bacteria Data Collected by the City of Boise from AU 011a, Lower Boise River, 2003 and 2004.

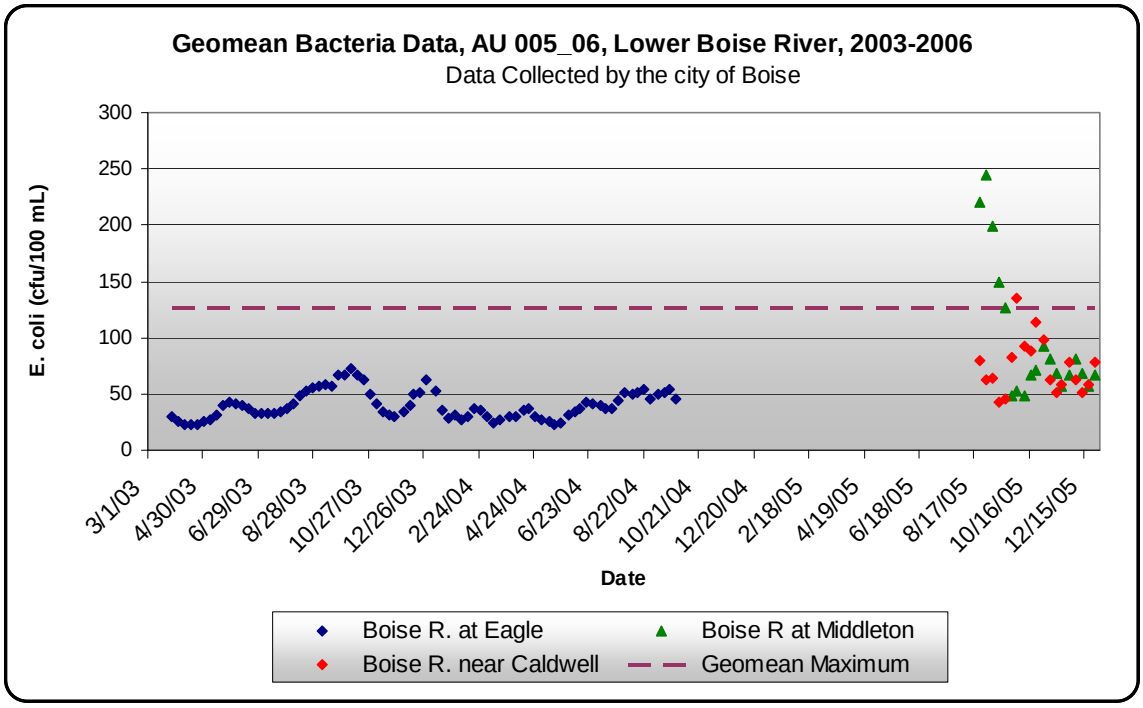


Figure 14. Geomean Bacteria Data Collected by the City of Boise from AU 005, Lower Boise River, 2003 through 2005.

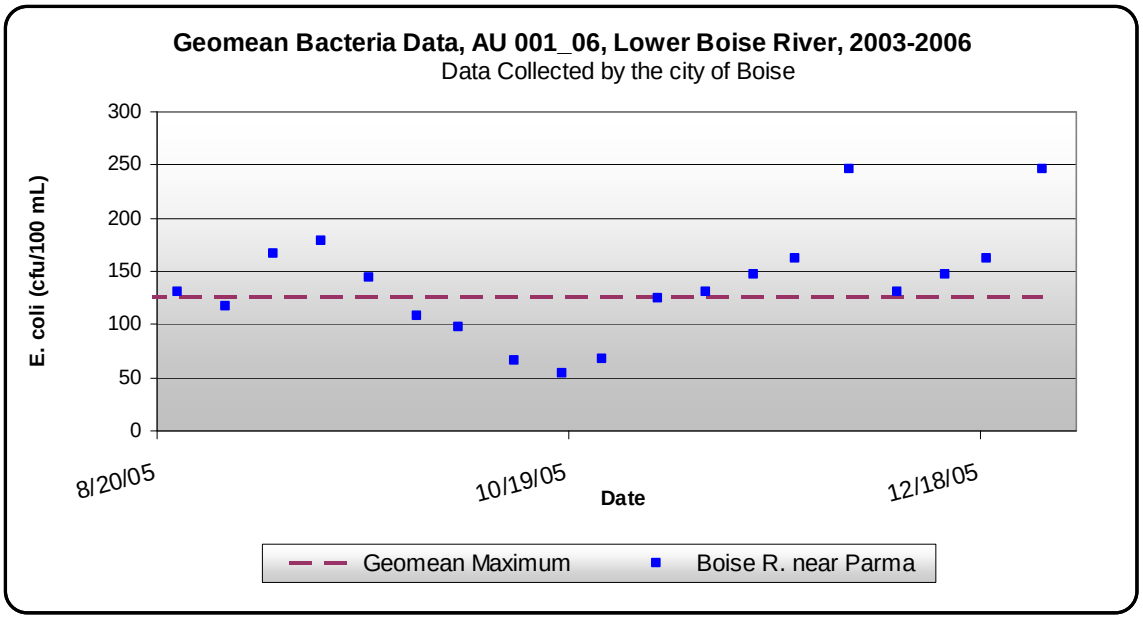


Figure 15. Geomean Bacteria Data Collected by the City of Boise from AU 001, Lower Boise River, 2005.

Instantaneous bacteria data, summarized in the following figures, also indicate that bacteria concentrations remain an issue for attainment of PCR and SCR beneficial uses in the subbasin.

At the Boise River near Glenwood control location designated use criteria for PCR are not exceeded, and criteria are exceeded seasonally at the Middleton and Parma locations (Figure 13, Figure 14 and Figure15). In the TMDL, the tributaries and drains were assigned LAs at their confluences with the Lower Boise River mainstem. As depicted in Figure 17 and Figure 18, all tributaries and drains exceed the designated beneficial use criteria for PCR and SCR, with Fifteenmile Creek contributing the greatest tributary load and Dixie Drain contributing the greatest load of the three sampled drains. It is not possible to determine trends with the limited data from tributary and drain locations; nor is it possible to determine what percent reduction has been achieved in the subbasin because of the change in standards from fecal coliform to *E. coli* concentrations. The most useful method of determining TMDL target achievement is to quantify the exceedance of current data over criteria (Figure 16, Figure 17 and Figure 18). The river locations indicate no significant change in bacteria load over the past five years, with the highest concentrations occurring during the summer months at mainstem TMDL control locations (Figure 16).

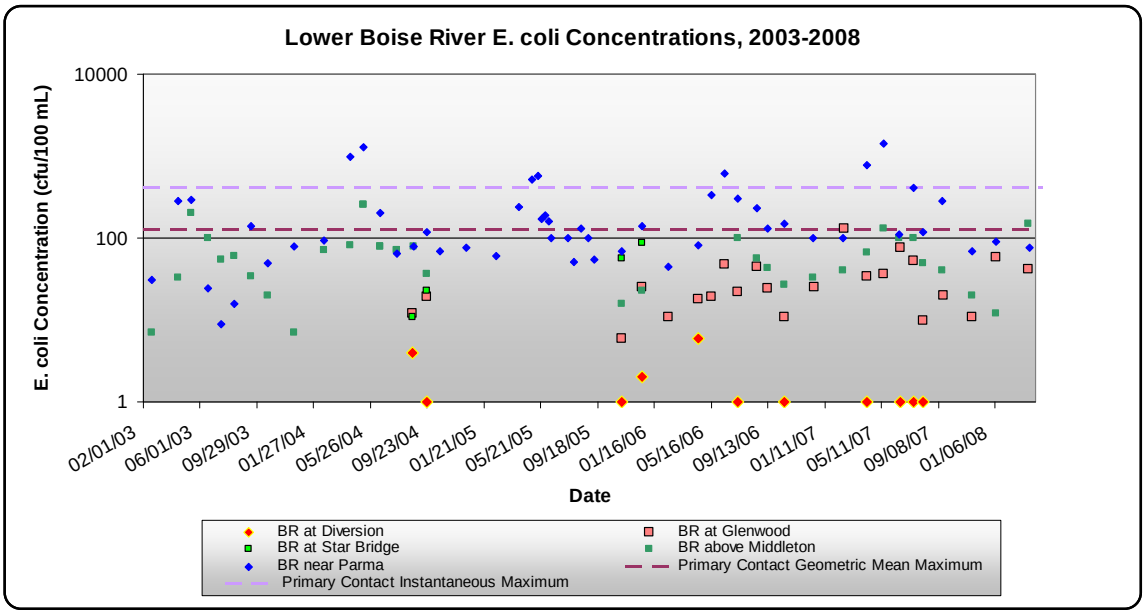


Figure 16. Graph of bacteria data collected from Lower Boise River locations, 2003 to 2008.

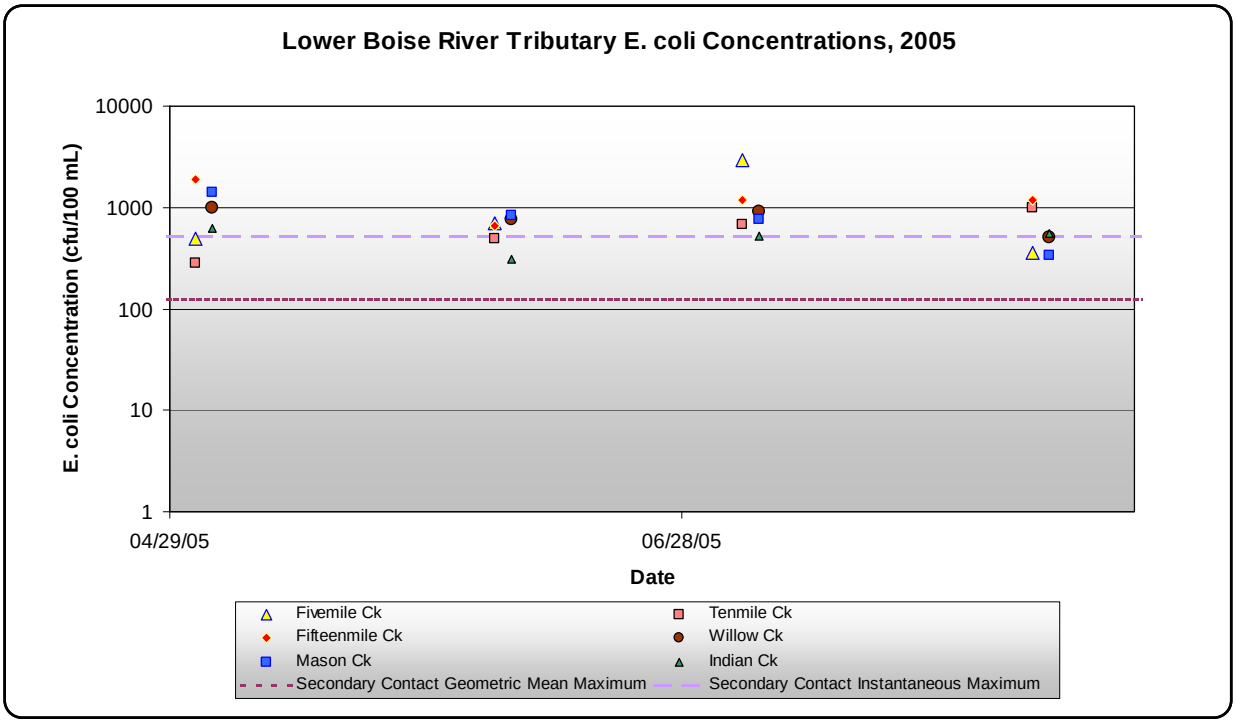


Figure 17. Graph of bacteria data collected from selected Lower Boise River tributaries, 2005.

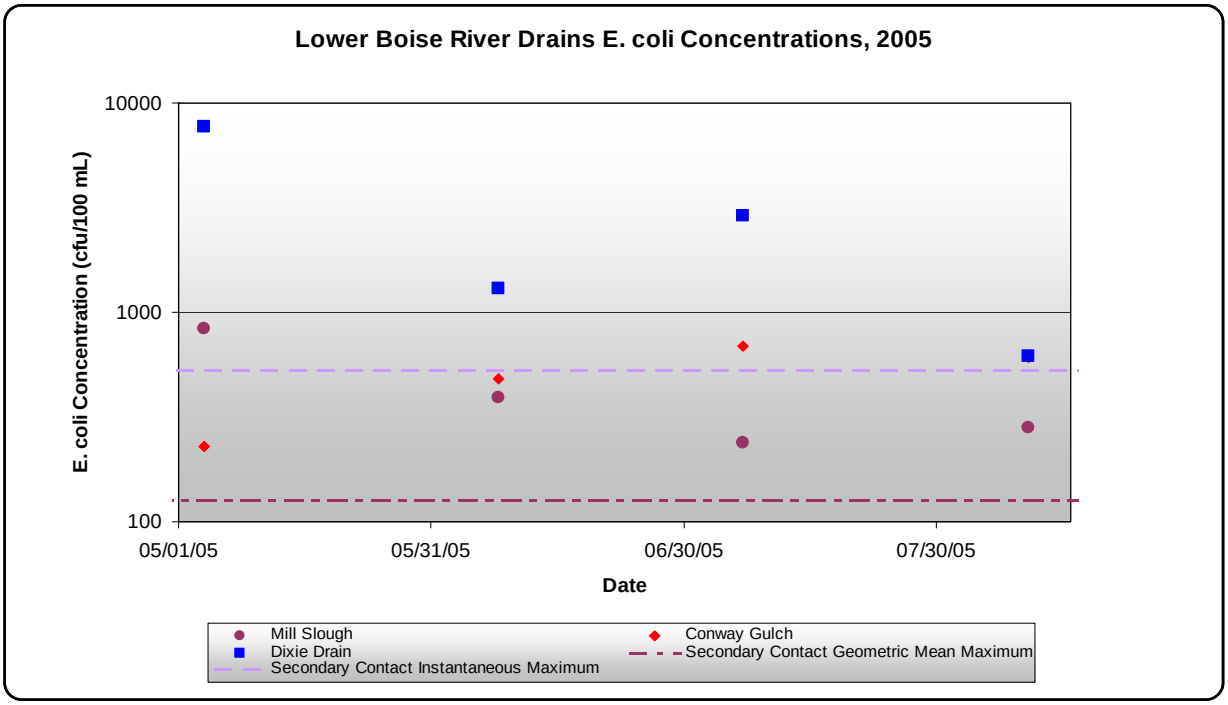


Figure 18. Graph of bacteria data collected from three Lower Boise River drains, 2005.

The city of Nampa provided recent *E. coli* sample analysis data from upstream and downstream of the city's WWTP on Indian Creek (AU 002_04). Bacteria concentrations upstream of the WWTP exceed beneficial use criteria. While the sample set is too small to arrive at definitive conclusions, it does appear that permitted point source effluent can have a dilution effect on some systems and reduce bacteria loads directly downstream of the permitted point source.

A load duration diagram for bacteria at the mainstem TMDL control location near Middleton indicates that there are no significant data gaps for bacteria and the load is consistent across all flow conditions (Figure 19). This indicates a consistent source of bacteria to the mainstem system near this location. While agricultural drains are defined by the CWA as nonpoint sources, conveyance structures deliver nonpoint source effluent to the Boise River at specific points, so there are instances where nonpoint source pollutants may resemble point source patterns on a load duration diagram.

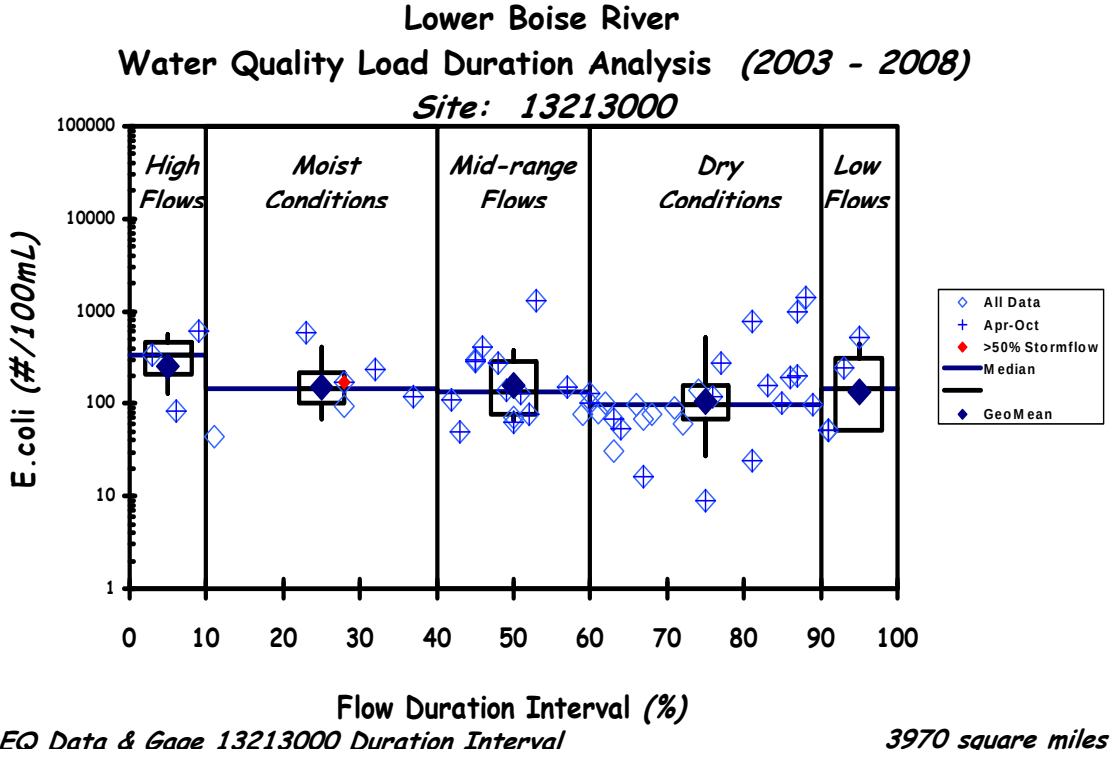


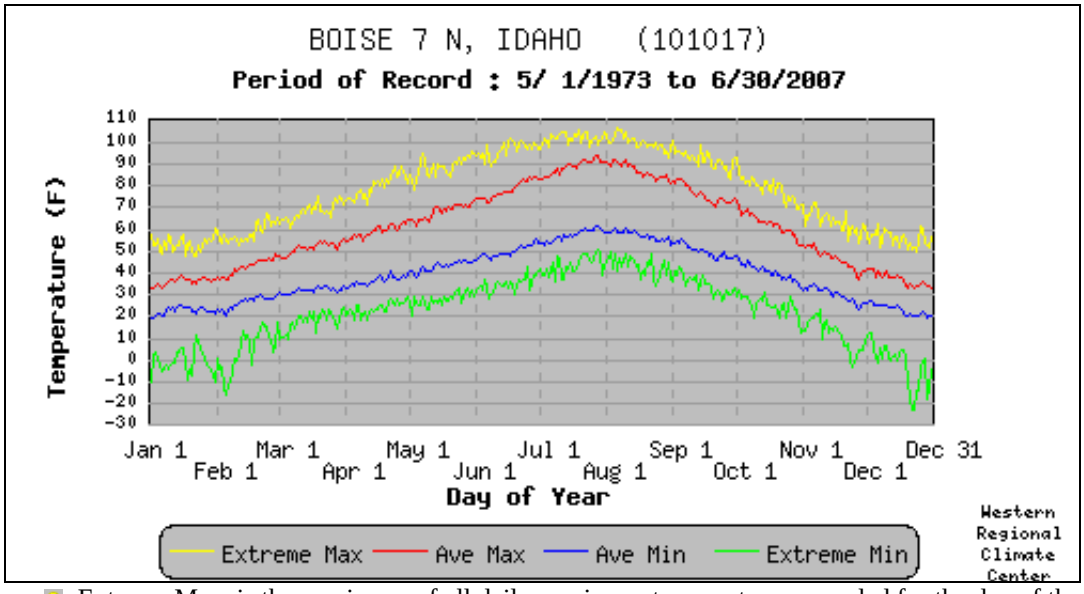
Figure 19. Bacteria Load Duration Diagram for Lower Boise River mainstem TMDL control monitoring location near Middleton.

Based on a review of the available data, the water quality standard for bacteria is exceeded in AUs 002_04 (Indian Creek), 005_06 (Boise River and Mill Slough), 006_02 (Mason Creek), 007_04 (Fifteenmile Creek), 008_03 (Tenmile Creek), 010_03 (Fivemile Creek), 011a_06 (Boise River), 015_03 (Willow Creek) and 017_03 (Sand Hollow Creek).

Temperature

Water temperature effects the attainment of beneficial uses for cold-water aquatic life (COLD) and salmonid spawning (SS) in the Lower Boise River subbasin. Information from the mid-1800s indicates that the subbasin supported a thriving salmonid fishery (ISHS, 1993). Even though geothermal groundwater sources exist in the Lower Boise River subbasin, hot springs are not discharging into surface waters in a way that influences surface water temperatures. Geothermal sources occur along the Boise Front, headwaters of Indian Creek, and in various locations near the confluence with the Snake River. A flow contribution analysis indicates that approximately 0.03% of identified Lower Boise River subbasin surface water receives water from geothermal sources. Except for AU 011b, the mainstem Boise River must meet the temperature criteria for SS beneficial use, and AU 011b must meet the criteria for COLD beneficial use. The appropriate time period for the species of salmonids in the Lower Boise River subbasin was determined using the time frames specified in the WBAG II (Grafe, et. al, 2002) and verifying that time frame with the Idaho Department of Fish and Game (Jeff Dillon, IDFG, personal communication, January 22, 2009).

As described in the WBAG II (Grafe, et al., 2002), if the temperature exceedance of numeric criteria is less than 10% and there is no other evidence of thermal impairment, delisting for temperature pollution may be considered. Idaho WQS provide an exemption for numeric temperature criteria exceedance in the event that air temperature is above the ninetieth percentile of a yearly series of maximum weekly maximum air temperatures (MWMT) calculated over the historic record from the nearest weather reporting station (IDAPA 58.01.02.03). Air temperature data has been collected in the subbasin from the early 1900s and the most recent 35 years are summarized in Figure 20.



- Extreme Max. is the maximum of all daily maximum temperatures recorded for the day of the year.
- Ave. Max. is the average of all daily maximum temperatures recorded for the day of the year.
- Ave. Min. is the average of all daily minimum temperatures recorded for the day of the year.
- Extreme Min. is the minimum of all daily minimum temperatures recorded for the day of the year.

Figure 20. Graph of daily air temperatures from 1973-2007 as retrieved from the Western Regional Climate Center for the Boise 7N weather station.

The city of Boise collected continuous water temperature data from several locations in the subbasin and has shared the data for use in this review as a professional courtesy. The data qualifies as Tier I data and can be used to make beneficial use attainment determinations. The daily maximum and daily average temperatures from the city locations for the past five years are presented in Figure 21, Figure 22, Figure 23 and Figure 24. Based on the data collected over the past five years, it appears that water temperature at all but one location in the Lower Boise River subbasin exceeds numeric criteria at some time of every year. The City of Boise and the USGS also collected continuous water temperature in 2004 from several drains and tributaries in the subbasin but the data has not been stored in the USGS database and is not available to the public. The city of Boise public works department created a report (City of Boise, 2005) using data collected in 2004. The averaged values reported by the City of Boise and included in an abridged format in the appendices of this report parallel the Tier I data presented in this report.

Most locations generally exceed temperature criteria from April through August and for brief periods between September and November. However, the TMDL monitoring location near Middleton exceeded criteria for two out of five years (2003, 2004) as early as mid-March, and in 2005 criteria was exceeded in mid-February. Because most of the criteria exceedances occur in late fall and early spring, it is unlikely that the air temperature exemption would apply to the locations and /or time periods that routinely exceed temperature criteria.

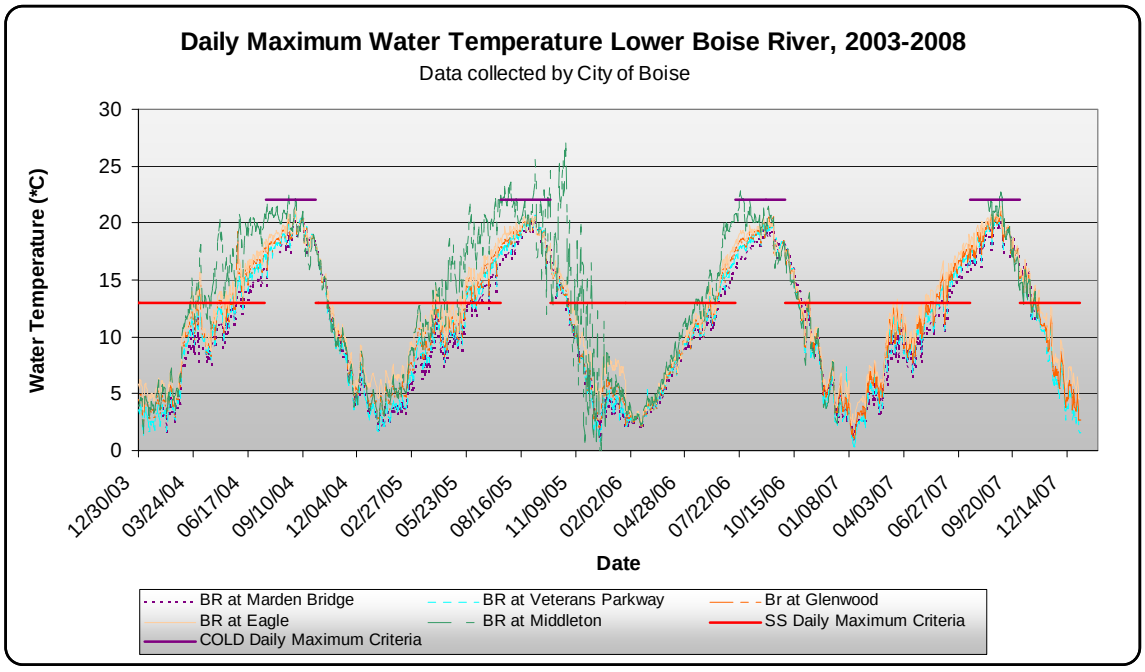


Figure 21. Graph of daily maximum water temperature of Lower Boise River locations compared to water quality standards for salmonid spawning, 2003-2008.

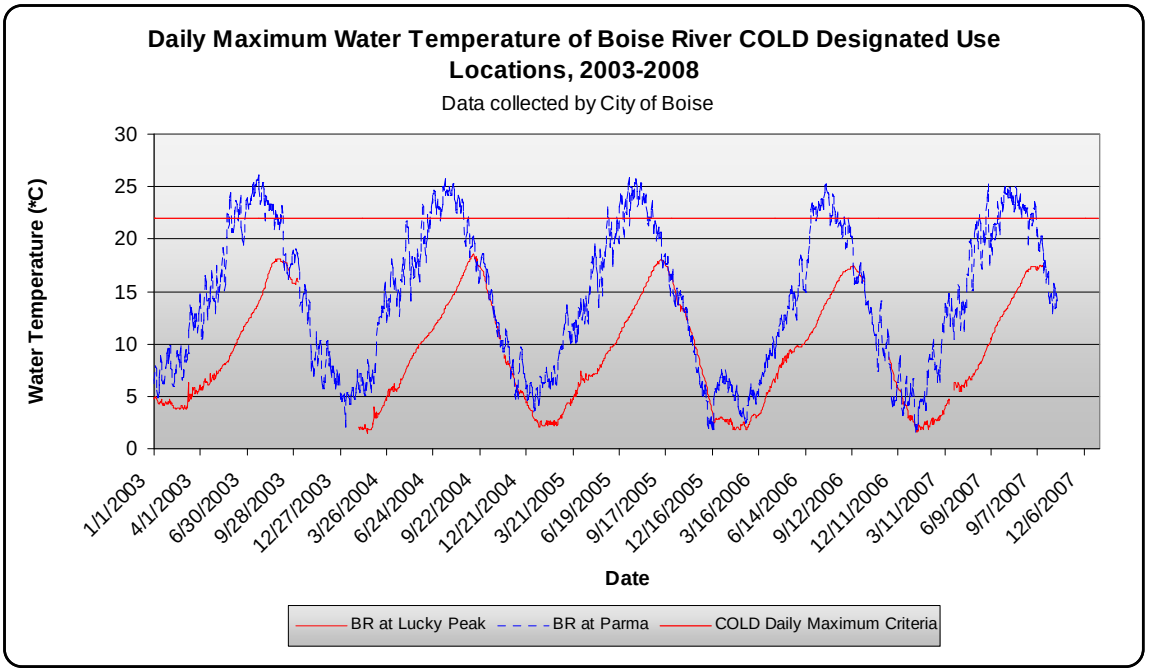


Figure 22. Graph of daily maximum water temperature at Boise River below Lucky Peak outfall and Boise River near Parma compared to water quality standards for cold-water aquatic life 2003-2008.

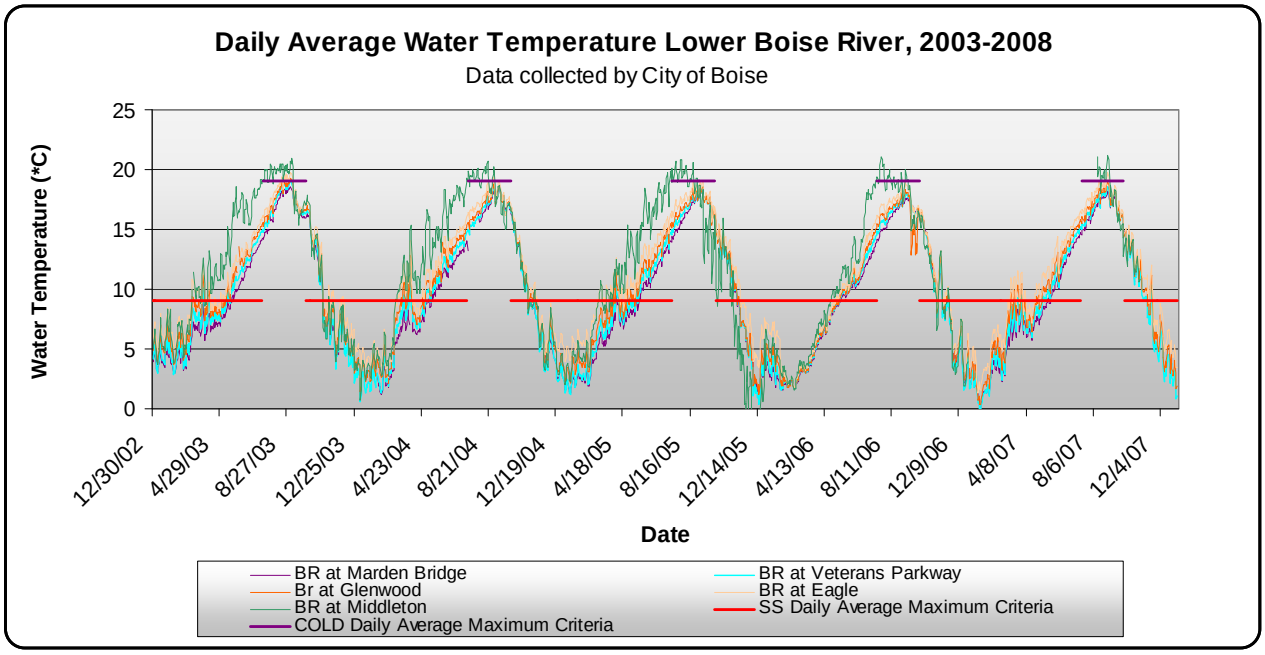


Figure 23. Graph of daily average water temperature of Lower Boise River locations compared to the water quality standards for salmonid spawning and cold-water aquatic life, 2003-2008.

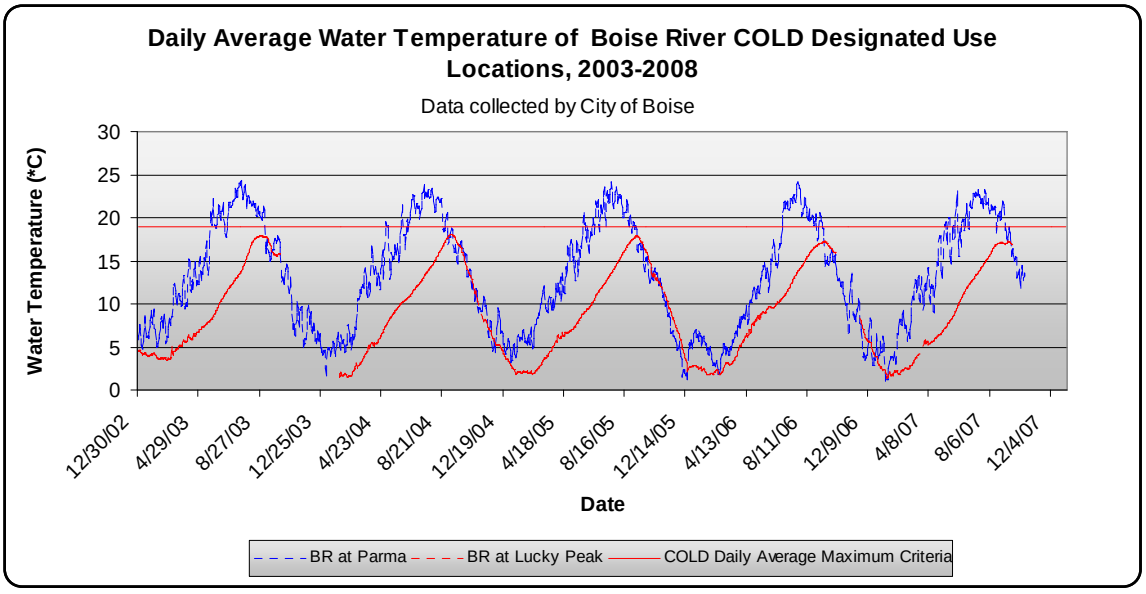


Figure 24. Graph of daily average water temperature at Boise River below Lucky Peak outfall and Boise River near Parma compared to the water quality standards for cold-water aquatic life, 2003-2008.

Instantaneous temperature data collected by the USGS, ISDA, and city of Nampa are presented in Figure 25, Figure 26, Figure 27, Figure 28 and Figure 29.

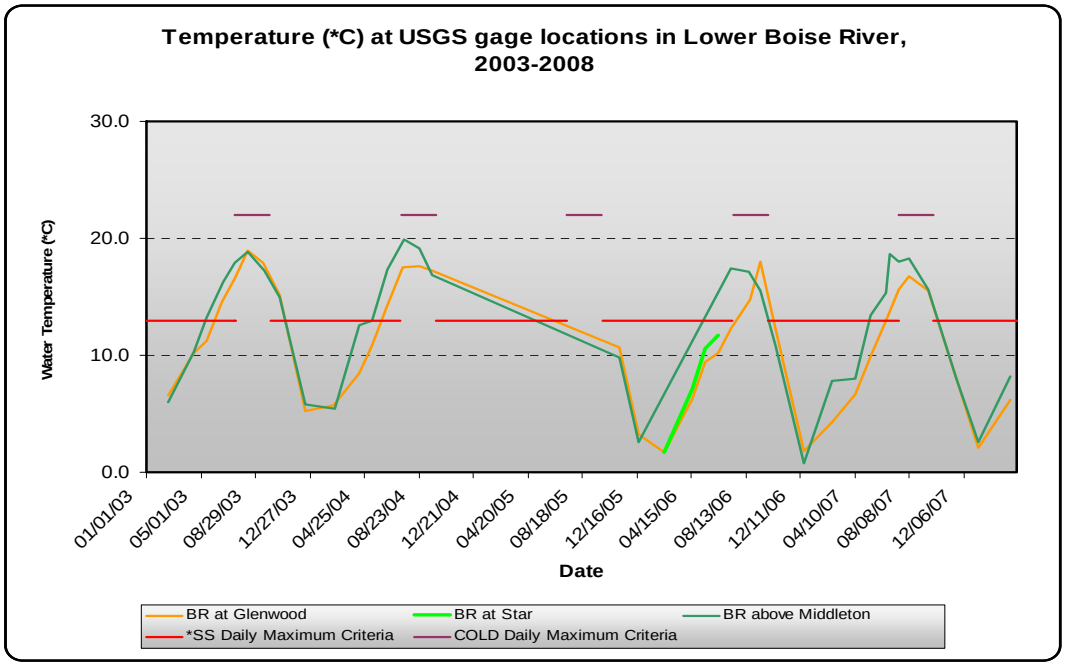


Figure 25. Graph of instantaneous water temperature reported by the USGS and ISDA compared to water quality standards for salmonid spawning designated uses, 2003-2008.

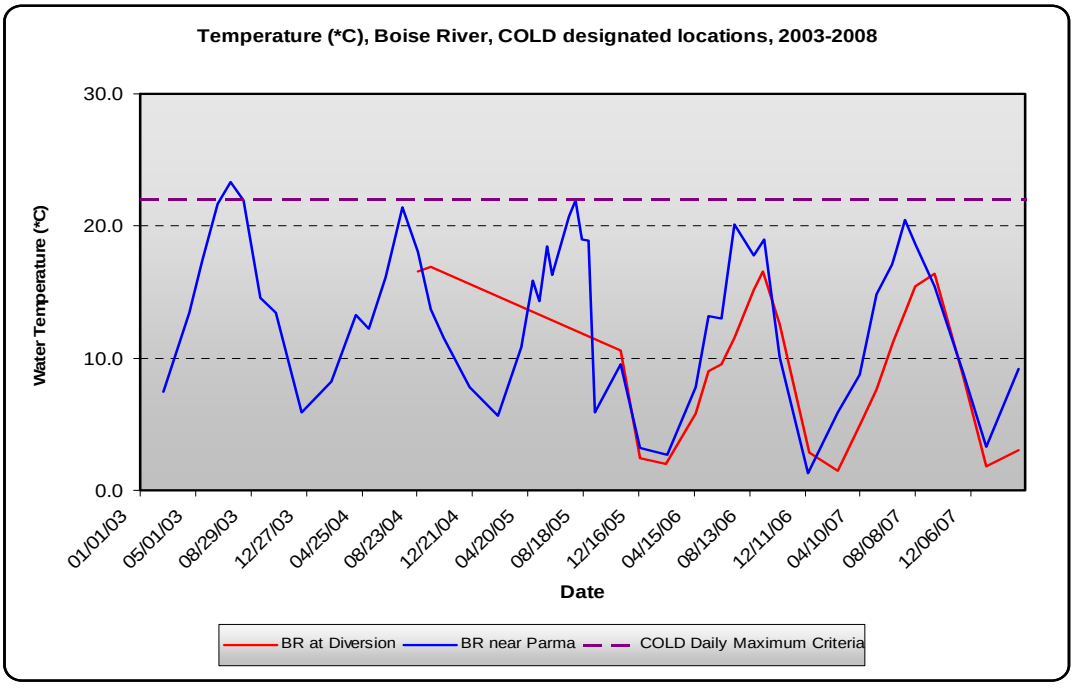


Figure 26. Graph of instantaneous water temperature reported by the USGS and ISDA compared to water quality standards for cold-water aquatic life designated uses, 2003-2008.

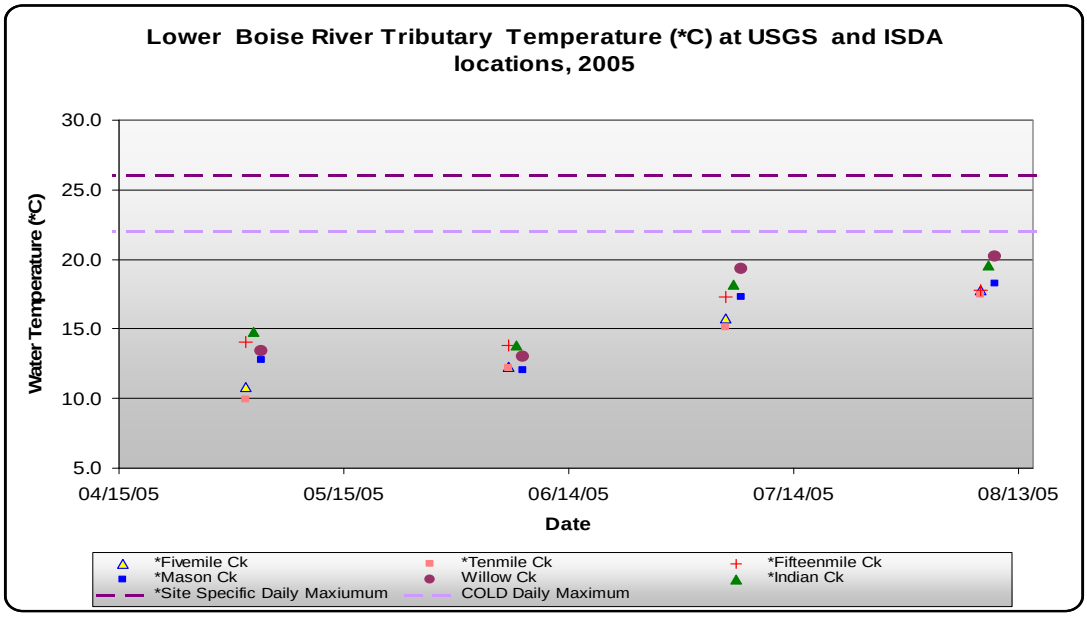


Figure 27. Graph of instantaneous water temperature reported by the USGS and ISDA, compared to water quality standards for site-specific(*) and cold-water aquatic life beneficial uses, 2005.

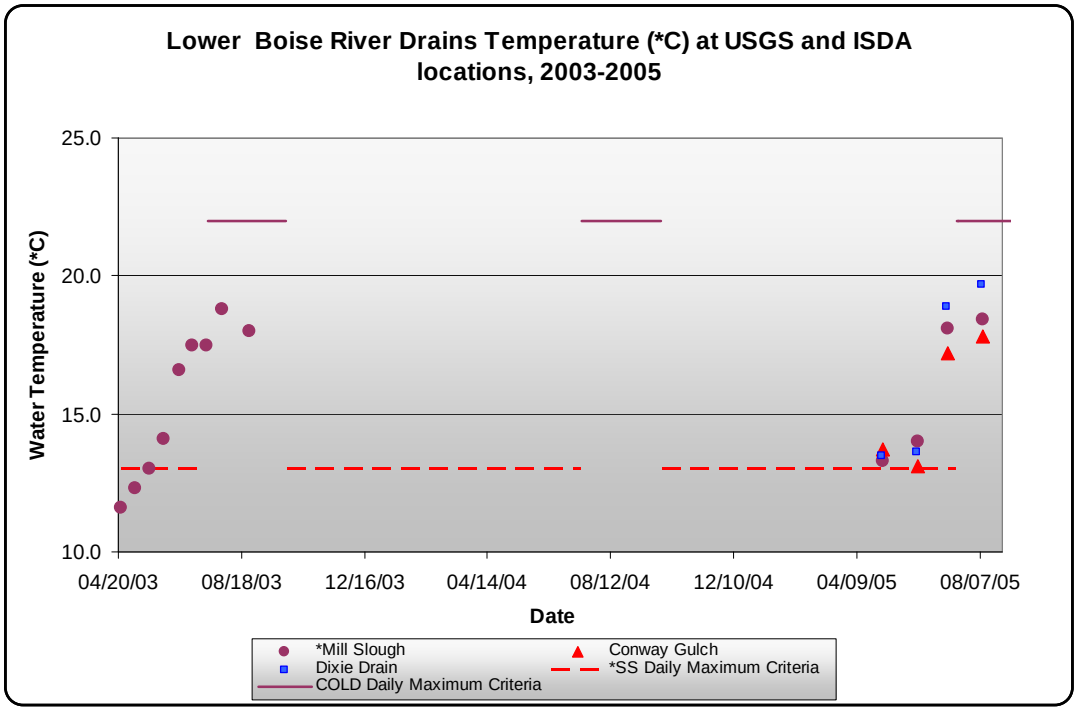


Figure 28. Graph of instantaneous water temperature reported by the USGS and ISDA compared to water quality standards for cold-water aquatic life and salmonid spawning beneficial uses, 2003-2005. * Applies to water bodies in AU_005 (Mill Slough).

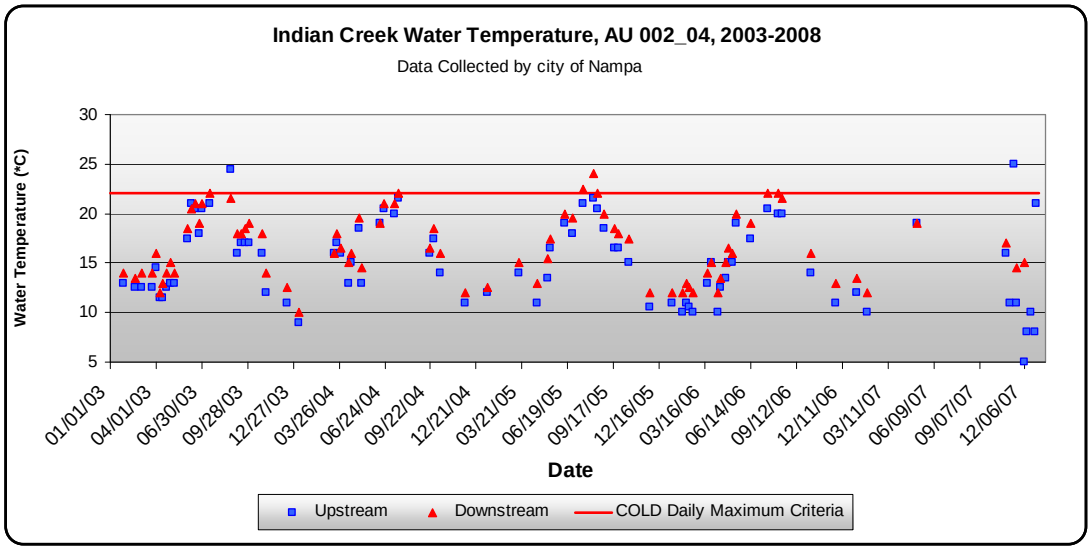


Figure 29. Graph of instantaneous water temperature (2003-2007) in Indian Creek, upstream and downstream of the wastewater treatment plant, reported by the city of Nampa, compared to water quality standards applicable to AU 002_04.

Temperature data collected by the city of Nampa near the WWTP between 2003 and 2007 indicate exceedance of designated beneficial use criteria in spring and fall months

every year (Figure 29). Temperature data collected near stormwater discharge locations in the Boise area were within the established permit limits. Instantaneous temperature data compared to the continuous data provides less detail regarding water temperature in the subbasin, but does document some exceedance of beneficial use criteria at a few locations throughout the subbasin in the spring. Sporadic point source data offers limited usefulness in identifying sources of thermal flux, such as ponds, diversions, reservoirs, tributaries, drains, hyporheic flow zones, springs and etc. Although half of the increase in mainstem water temperature takes place between the outfall of Lucky Peak Dam and Glenwood Bridge, water temperature in the mainstem continues to warm to Middleton, and then cools only slightly to the confluence with the Snake River. Based on a review of all available data, water temperature exceeds beneficial use criteria in AUs 001_06, 002_04, 005_06 and 011a_06.

Benthic Macroinvertebrate Data

In accordance with the WBAG II (Grafe, et. al., 2002), benthic macroinvertebrate data may be used to infer temperature regimes as cold, cool, warm, or hot by using an appropriate index to identify the temperature tolerance of the dominant species. While the USGS data tabulated below (Table 16) cannot be used to make use attainment determinations because samples were collected outside the protocol timeframe, it is relevant to this review and is considered as Tier II data.

Table 16. Summary of benthic macroinvertebrate (5-riffle composite) data collected by the USGS from mainstem Lower Boise River, 2003-2006. Temperature tolerance indices compiled by DEQ.

Boise River Below Eckert Road, USGS 13203760-AU 011a_06				
Water Year	**2003**	**2004**	**2005**	**2006**
Date	10/25/2002	11/10/2003	10/26/2004	10/31/2005
Cold	19	40	125	32
Cool	306	56	317	197
Warm	7,297	1,601	4,320	3,485
Hot	**0**	**0**	**0**	**0**
unclassified	5,088	2,999	5,252	2,802
Temperature Tolerance				
total classified	7,622	1,697	4,762	3,714
%Cold	0	2	3	1
%Cool	4	3	7	5
%Warm	96	94	91	94
%Hot	**0**	**0**	**0**	**0**
Boise River at Glenwood Bridge, USGS 13206000-AU 011a_06				
Date	10/24/2002	10/28/2003	10/26/2004	11/7/2005
Cold	0	0	0	0
Cool	83	131	213	16
Warm	5,334	2,479	3,214	1,079
Hot	**0**	**4**	**7**	**2**
Date	10/24/2002	10/28/2003	10/26/2004	11/7/2005
unclassified	3,839	3,573	4,397	712

Temperature Tolerance				
Water Year	**2003**	**2004**	**2005**	**2006**
total classified	5,417	2,614	3,434	1,097
%Cold	0	0	0	0
%Cool	2	5	6	1
%Warm	98	95	94	98
%Hot	**0**	**0**	**0**	**0**
Boise River at Middleton, USGS 132010050-AU 005_06				
Date	10/24/2002	10/28/2003	10/26/2004	11/7/2005
Cold	16	10	0	5
Cool	432	127	156	45
Warm	1,216	954	816	367
Hot	**14,160**	**7,504**	**10,440**	**1,018**
unclassified	448	75	804	111
total classified	5,417	2,614	3,434	1,097
%Cold	0	0	0	0
%Cool	3	1	1	3
%Warm	8	11	7	26
%Hot	**89**	**87**	**91**	**71**
Boise River at Caldwell, USGS 13211000-AU 005_06				
Date	10/24/2002	11/20/2003	11/23/2004	11/8/2005
Cold	0	0	2	0
Cool	159	304	61	10
Warm	1,958	1,889	1,188	177
Hot	**170**	**2,885**	**35**	**1**
unclassified	1,232	116	882	146
Temperature Tolerance				
total classified	2,287	5,078	1,286	188
%Cold	0	0	0	0
%Cool	7	6	5	5
%Warm	86	37	92	94
%Hot	**7**	**57**	**3**	**1**
Boise River at Parma, USGS 13213000-AU 001_06				
Date	10/23/2002	10/27/2003	11/24/2004	11/17/2005
Cold	38	6	12	0
Cool	1,882	342	218	37
Warm	3,024	587	671	1,000
Hot	**250**	**524**	**71**	**5**
unclassified	587	87	1,738	584

Temperature Tolerance				
Water Year	**2003**	**2004**	**2005**	**2006**
total classified	5,194	1,459	972	1,042
%Cold	1	0	1	0
%Cool	36	23	22	4
%Warm	58	40	69	96
%Hot	**5**	**36**	**7**	**<1**

Benthic macroinvertebrate data was also collected from the subbasin through the BURP in 2003 and qualifies as Tier I data. A summary is presented in Table 17, by BURP site ID and associated AU.

Table 17. Summary of temperature tolerance statistics of benthic macroinvertebrate organisms collected by DEQ through the Beneficial Use Reconnaissance Program (BURP), 2003.

Stream and AU	BURP ID	Date	Water Temperature (*C)	%Cold	%Cool	%Warm	%Hot
Indian Creek at Robinson Road-AU 003a_04	2003SBOIA051	10/14/03	13.5		<1	14	86
Mason Creek at Lakeview Park-AU 006_02	2003SBOIA050	10/15/03	11.3		<1	13	87
Fivemile Creek at Meridian Road-AU 010_03	2003SBOIA052	10/14/03	14.9			34	66

The Tier I macroinvertebrate data indicate that Lower Boise River AUs 003a_04, 006_02 and 010_03 are dominated by organisms that prefer hot water. AUs 006 and 010 are designated for MOD beneficial use (not approved by EPA) and must meet criteria of 26 °C daily maximum, and 23 °C daily average maximum. AU 003a_04 is designated for SS, COLD, and SCR. Using the guidelines in the WBAG II (Grafe, et al., 2002), and absent any data to the contrary, an extrapolation of temperature data can be made across the AU in which data was collected. Based on a review of the available data, it does not appear that temperature criteria are exceeded in AU 006_02 or 010_03.

Fish Data

Water temperature and other habitat measures can also be inferred from an analysis of fish communities observed in water bodies. The USGS collected fish community data from the Lower Boise River mainstem at the same locations as benthic macroinvertebrate data, and this data can be used in a manner consistent with the macroinvertebrate data. DEQ also collected fish community data from two sites in the subbasin in 2003 as part of the BURP. Table 18 summarizes the temperature tolerance of the fish species collected by the USGS and DEQ from 2003 and 2004.

Table 18. Summary of temperature tolerance of fish community data collected by the USGS and DEQ between 2003 and 2004.

Site Name	AU Site ID	Date Collected	%Cold	%Cool	%Warm	% Salmonids	Individuals Collected
USGS Data							
Lower Boise River below Eckert Road	AU 011a_06 4333571160800	11/17/2003	20	80	0	20	854
Lower Boise River above Lander Street WWTP	AU 011a_06 4336571161321	11/18/2003	53	47		47	524
Lower Boise River below Lander Street WWTP	AU 011a_06 4338281161459	11/18/2003	61.3	38.4	0.3	61.3	284
Boise River at Glenwood Bridge	AU 011_06 13209500	8/18/2004	24.8	74.1	1.1	24.8	173
Lower Boise River above West Boise WWTP	AU 005_06 4340121161823	11/19/2003	99	0.9	0.1	89	384
Lower Boise River below West Boise WWTP	AU 005_06 4340301162020	11/19/2003	83.5	15.5	1	83.5	291
BURP Data							
Indian Creek at Robinson Road-	AU 003a_04 2003SBOIA050	10/14/03	100			0	21
Blacks Creek at Meridian Rd	AU 009_02 2003SBOIA052	10/14/03	100			0	63

Except for the data collected at Glenwood Bridge in 2004, fish data collected by the USGS can be used as Tier II data. The Glenwood Bridge (TMDL control monitoring location) fish data correlated with the water temperature and benthic macroinvertebrate data indicate that COLD is not a supported use in AU 011a_06.

Dissolved Oxygen

Dissolved oxygen (DO) is another parameter with numeric WQS criteria used to determine attainment of beneficial uses in the Lower Boise River subbasin. DO data was collected by the same entities as other data reviewed for this report and Figure30, Figure 31 and Figure 32 summarize the DO data reviewed for this report.

Based on the data collected by the USGS and ISDA, beneficial use criteria for DO are met in all monitored AUs.

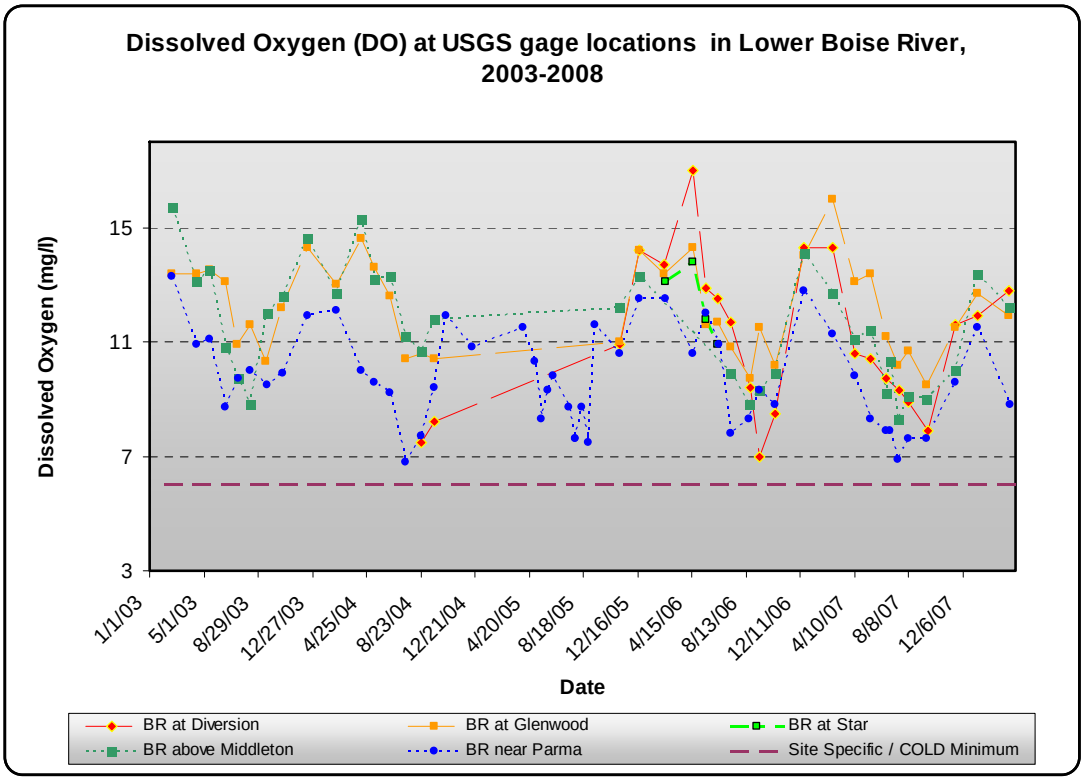


Figure 30. Graph of instantaneous dissolved oxygen concentrations reported by the USGS from Lower Boise River gage locations, 2003-2008.

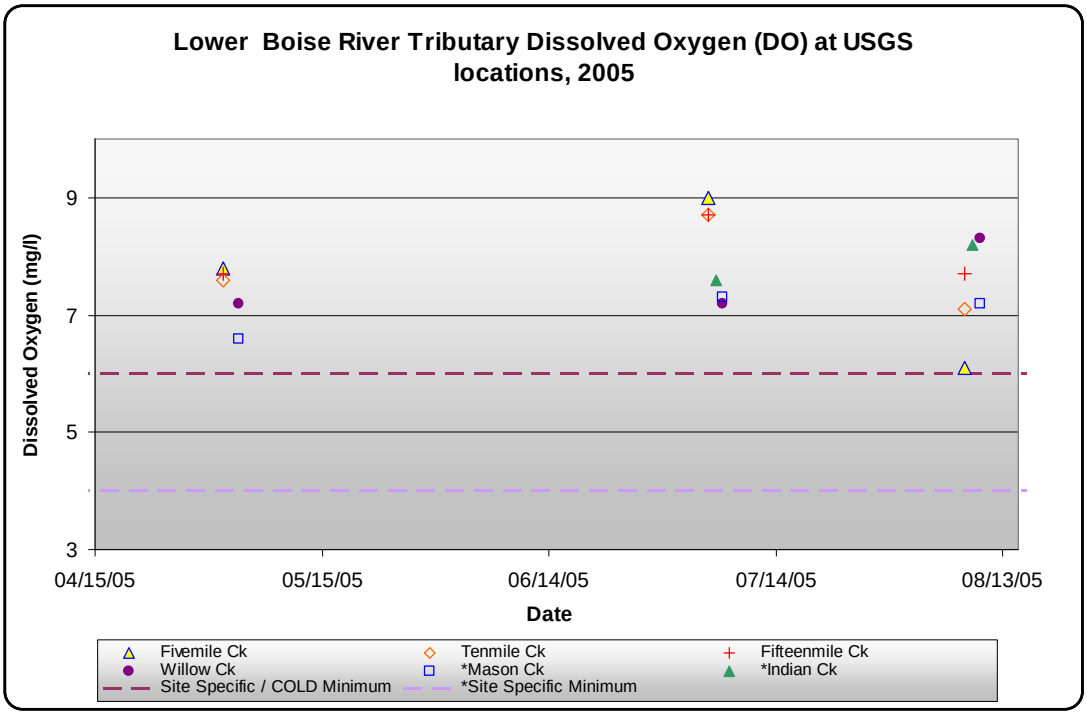


Figure 31. Graph of instantaneous dissolved oxygen reported by the USGS from Lower Boise River tributary locations, 2003and 2005.

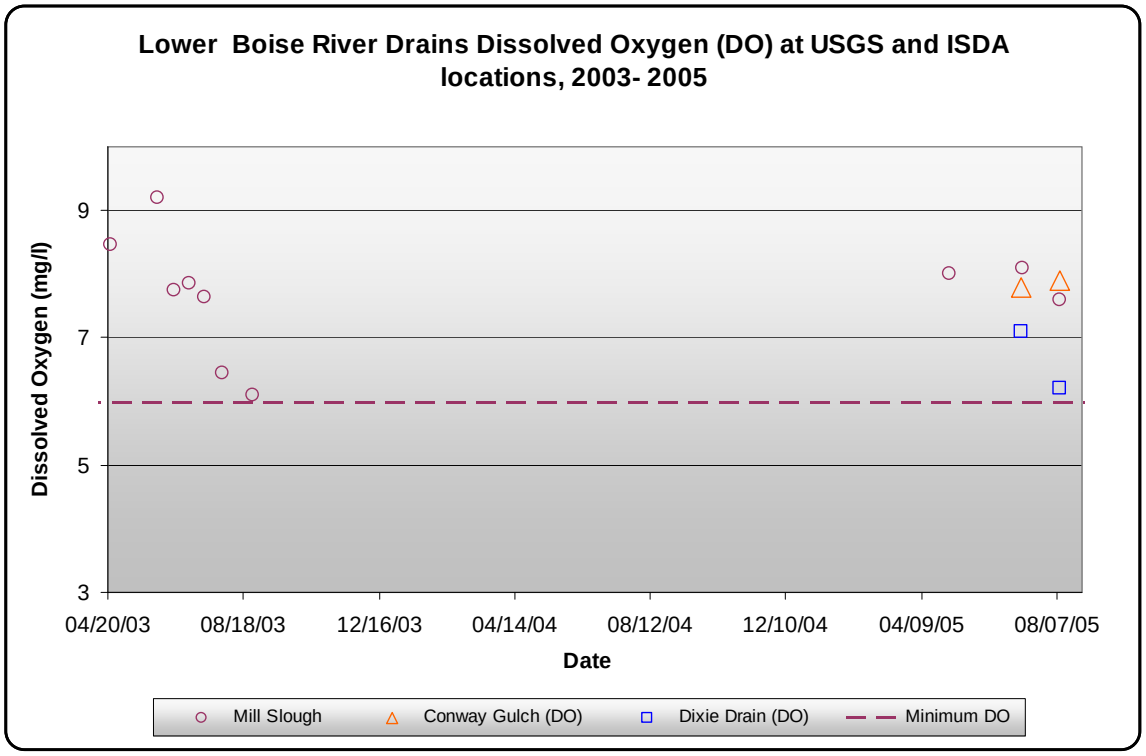


Figure 32. Graph of instantaneous dissolved oxygen reported by the USGS and IDA from select Lower Boise River drains 2003 and 2005.

pH

The criterion for pH is intended to protect aquatic life beneficial uses (COLD, SS, MOD (not approved by EPA), etc.). pH data was collected by the USGS, ISDA, city of Nampa, BOR and DEQ at several locations in the subbasin. The following graphs compare the data collected in the past five years to the numeric beneficial use criteria specified for each AU or site in the WQS (Figure 33 and Figure 34). Based on the data collected, the Boise River at Glenwood Bridge is the only location that has exceeded pH criteria in the past five years (Figure 35).

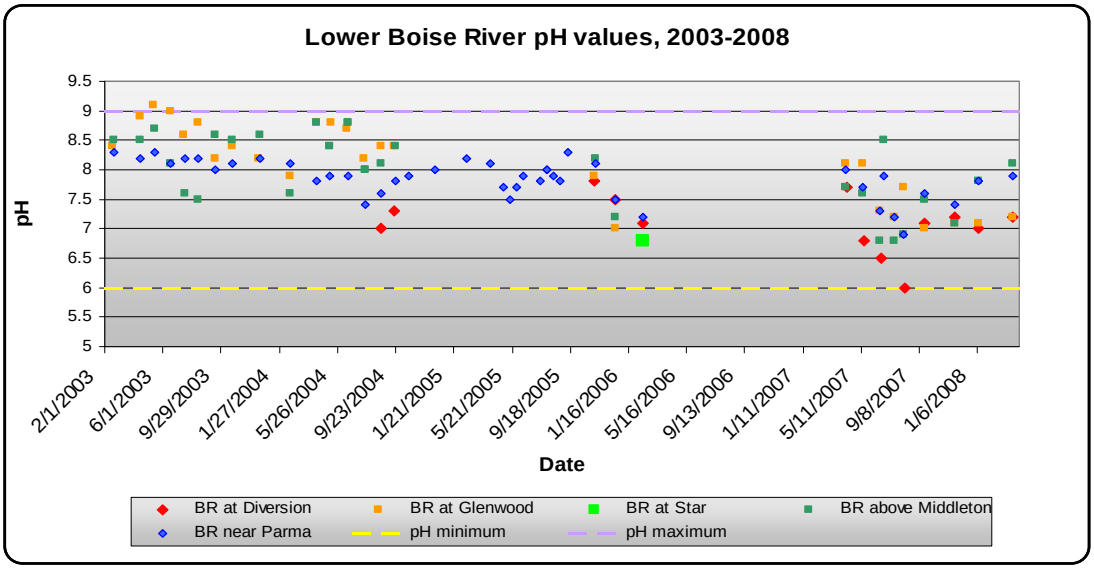


Figure 33. pH data collected from mainstem Boise River locations by the USGS from 2003 to 2008.

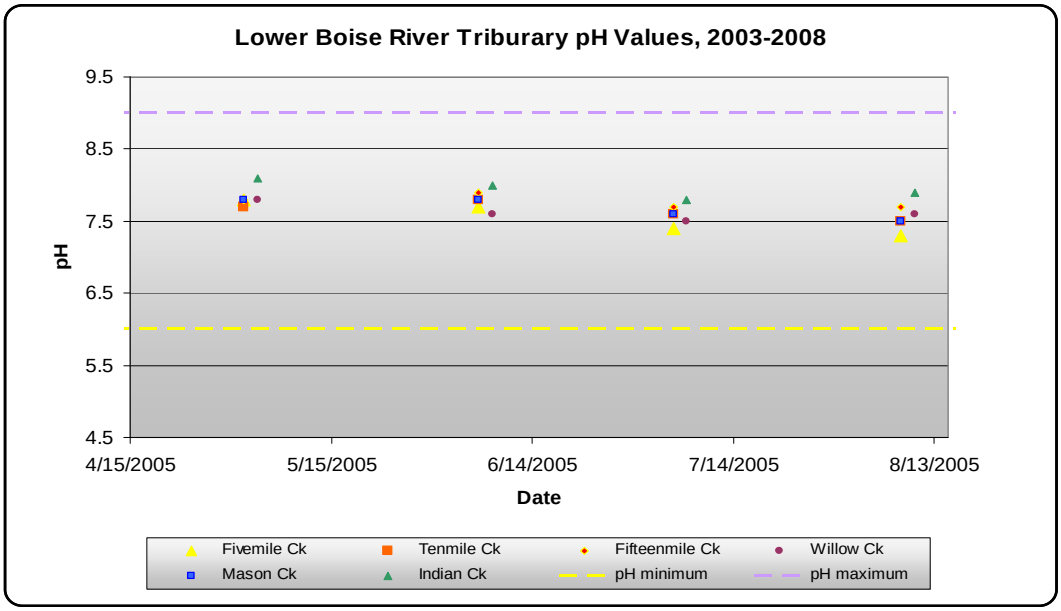


Figure 34. pH data collected by the USGS from Lower Boise River tributaries, 2005.

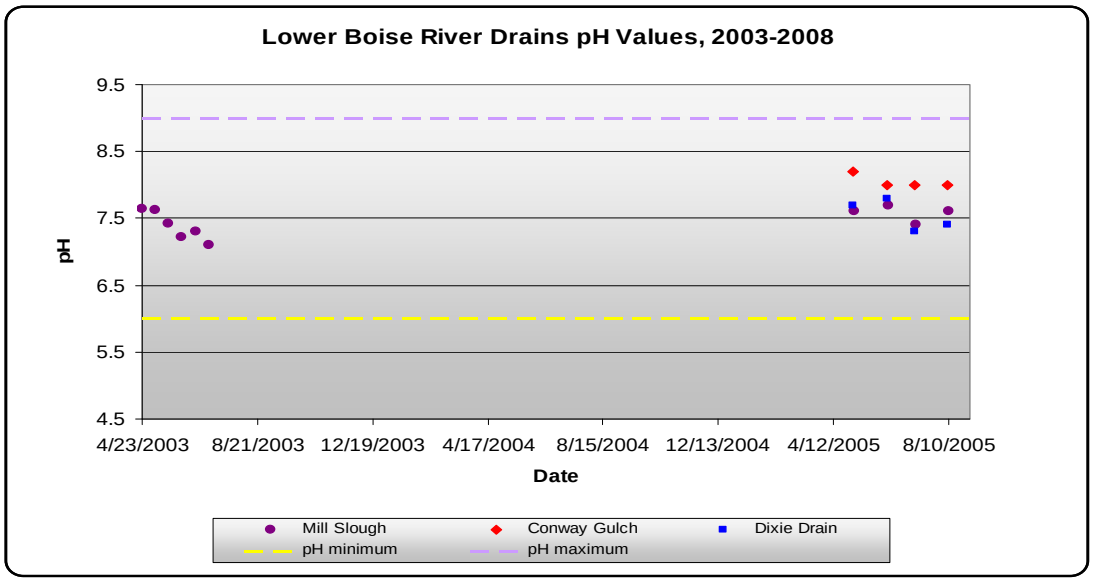


Figure 35. pH data collected by ISDA and the USGS from Lower Boise River drains, 2003 and 2005.

Based on data reviewed for this report, pH criteria for beneficial uses are met at all locations in the subbasin.

Ammonia

Ammonia concentration criteria are intended to protect aquatic life beneficial uses. The criteria are dependent on pH, with a maximum acute concentration (CMC) criterion and a maximum chronic criterion (CCC). The USGS, ISDA, BOR, city of Nampa and DEQ collected ammonia data from several locations in the subbasin between 2003 and 2008. Figure 36, Figure 37 and Figure 38 are graphs of collected data. Figure 39 is a graph of data from Indian Creek (AU 002_04), collected by the city of Nampa. As none of the reported analytical results exceed criteria, there are no maximum criteria lines on the graphs.

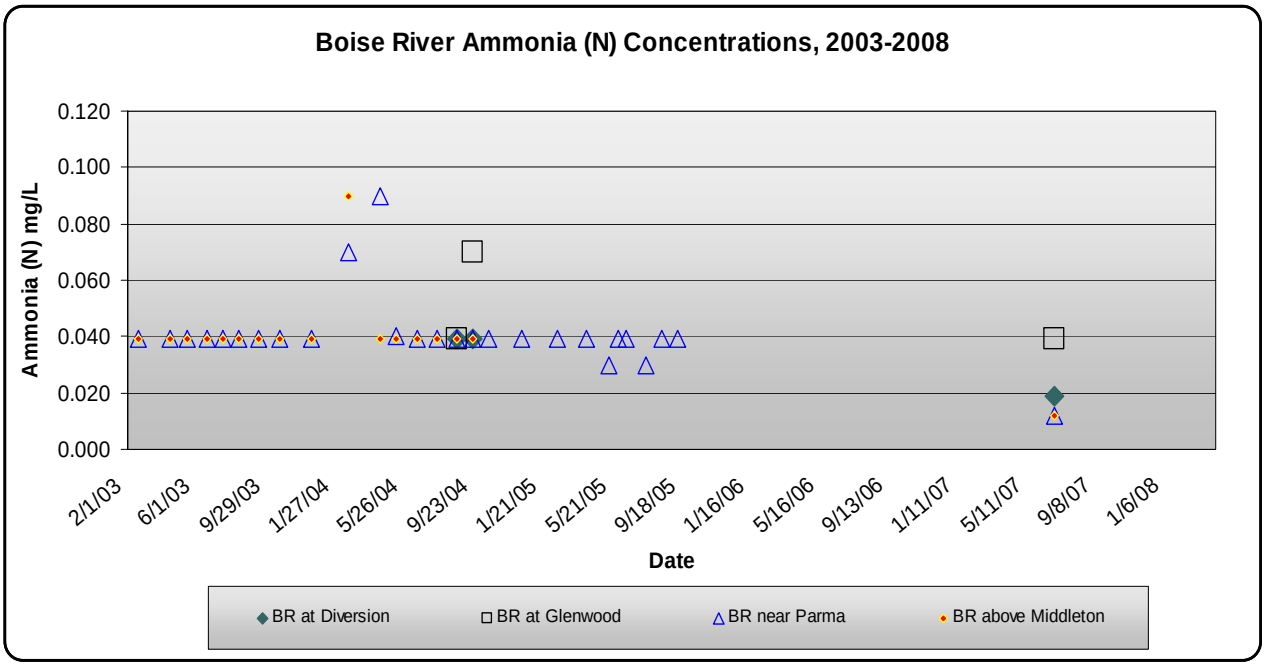


Figure 36. Ammonia data collected by the USGS from Lower Boise River locations from 2003 to 2008.

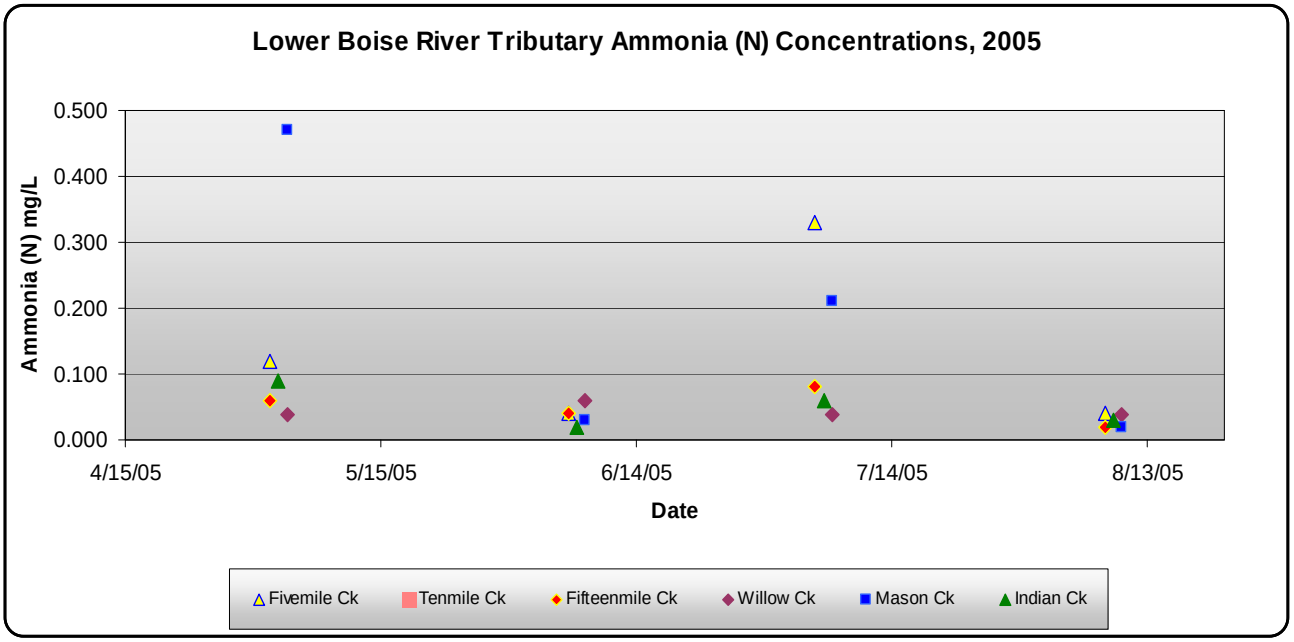


Figure 37. Ammonia data collected by the USGS from Lower Boise River tributaries, 2005.

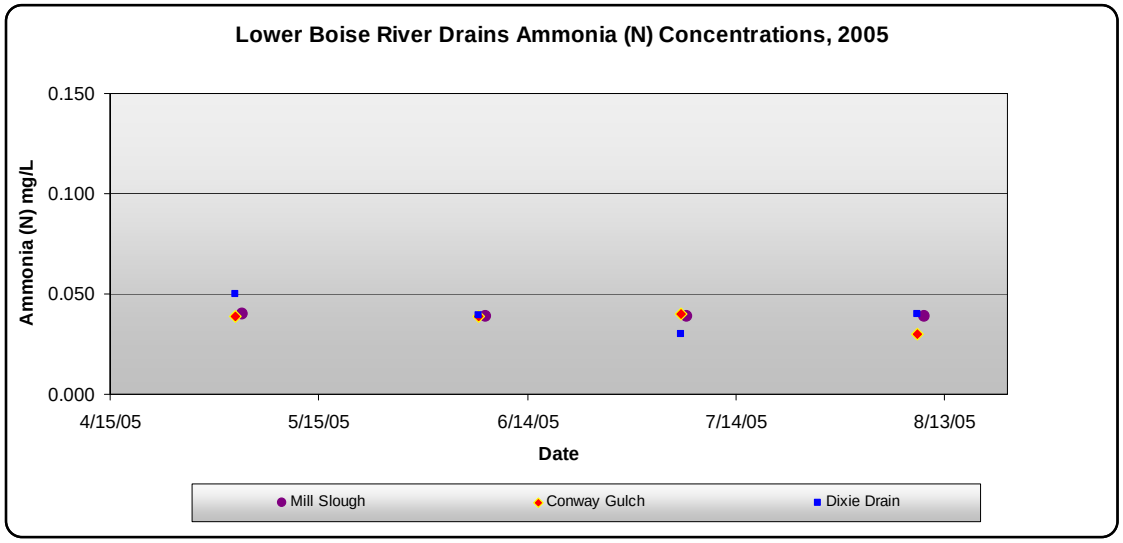


Figure 38. Ammonia data collected by the USGS from Lower Boise River drains, 2005.

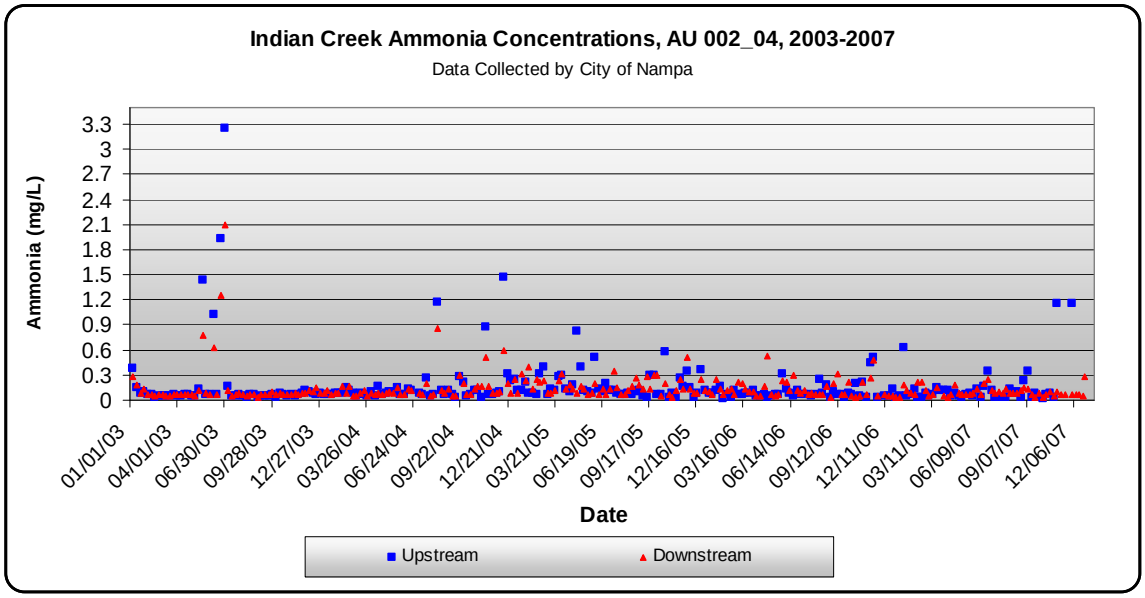


Figure 39. Ammonia data collected by the city of Nampa upstream and downstream of the WWTP on Indian Creek, 2003-2007.

Figure 39 represents another circumstance where permitted point source effluent may provide a diluting effect on pollutant loads by reducing ammonia concentrations downstream of the point of discharge. Based on data collected by the USGS, ISDA, DEQ and the city of Nampa, reported ammonia concentrations do not exceed criteria for COLD beneficial uses.

Flow and Habitat

Prior to westward expansion of the population of the United States, human population in the Lower Boise River subbasin was sparse. Ore mining in the region in the mid-1800s promoted rapid migration to the Boise River subbasin. Agriculture in river valleys to provide food for the mining towns completely altered the natural hydrology of the Lower Boise River subbasin by the late 1800s (ISHS, various dates). By the early 1900s, federal land management agencies had been created to develop water resource projects to control flooding and provide for irrigation needs to support agriculture in the western United States (USACE, 1995; US BOR, 1997). The results of those activities in the Lower Boise River subbasin are almost 500 miles of canals and drains and at least 49 permitted dams and numerous impoundments, diversions and drains to accommodate urban and agricultural activities (Figure 40).

This does not account for or address the diversions and impoundments that are not documented or monitored or the quality and quantity of those features. All streams in the subbasin have been altered or modified and in most years 75 to 89% of the mainstem flow is diverted between Diversion Dam and the Glenwood Bridge (Figure 42), with an estimated 59% of diverted water returned to the mainstem through drains or subsurface flow between Star and Parma (BOR, 2007). Between the Glenwood Bridge and Parma additional diversions remove an additional 1,600 cfs during the peak of a typical irrigation season.

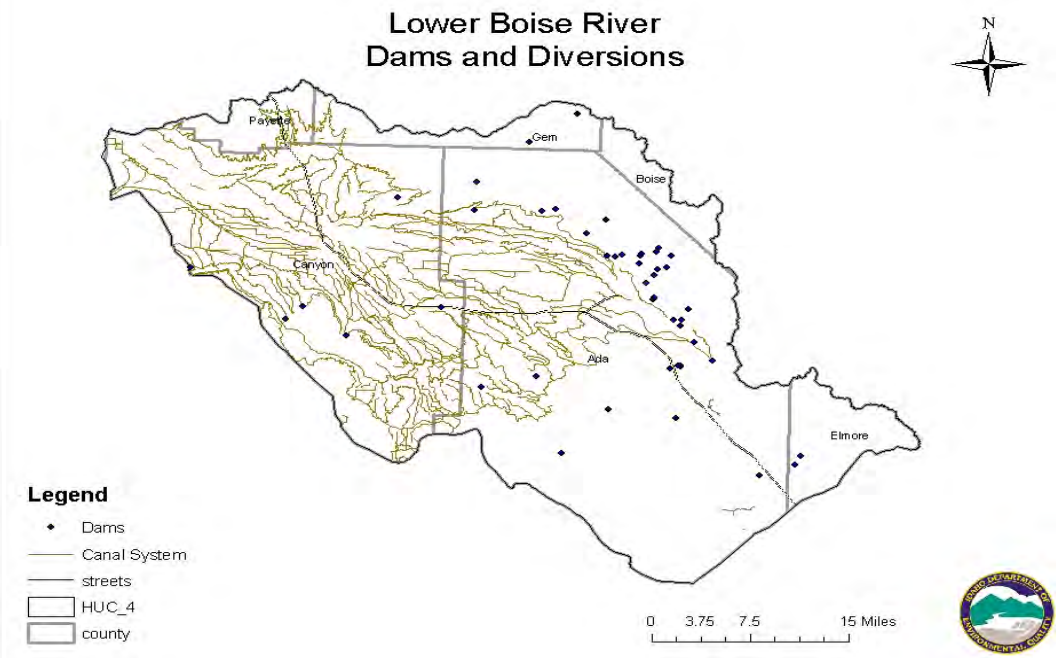


Figure 40. Lower Boise River constructed dams and diversions (canals) permitted through the Idaho Department of Water Resources (IDWR).

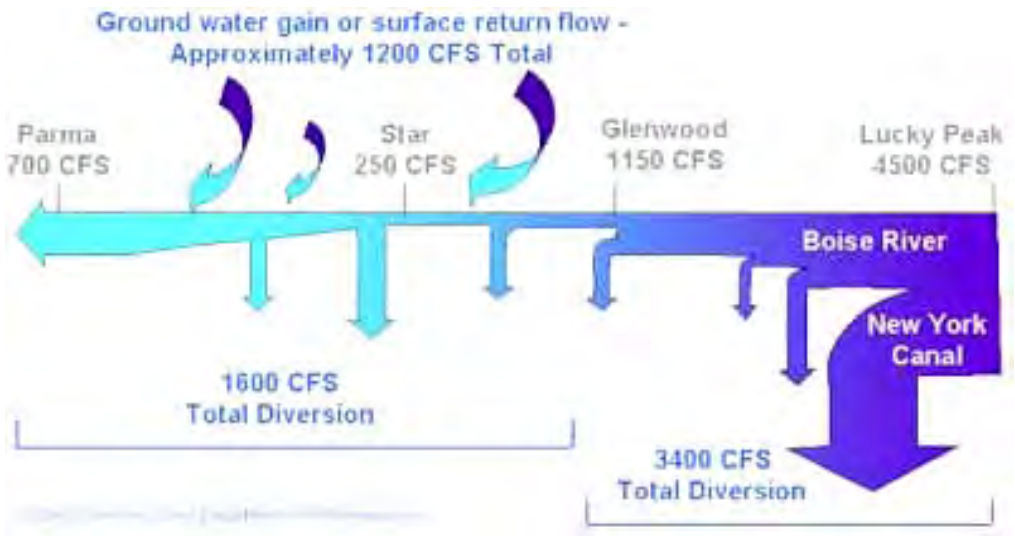


Figure 41. Diagram of diversions and returns to the Lower Boise River, as adapted from Digital Atlas of Idaho, 2008.

It is not possible to determine what effect diversions and drains have on water quality in the Lower Boise River subbasin because water quality data for diversions and drains is not available. It is likely that diversions and drains increase water temperature in the mainstem and it appears that the water contributed back to the mainstem by the drains is warmer than the water contributed by the tributaries. The effect of the numerous streamside impoundments is also unknown. Flows and diversions from Lucky Peak to Glenwood are represented in Figure 42, and from Glenwood to Parma in Figure 43.

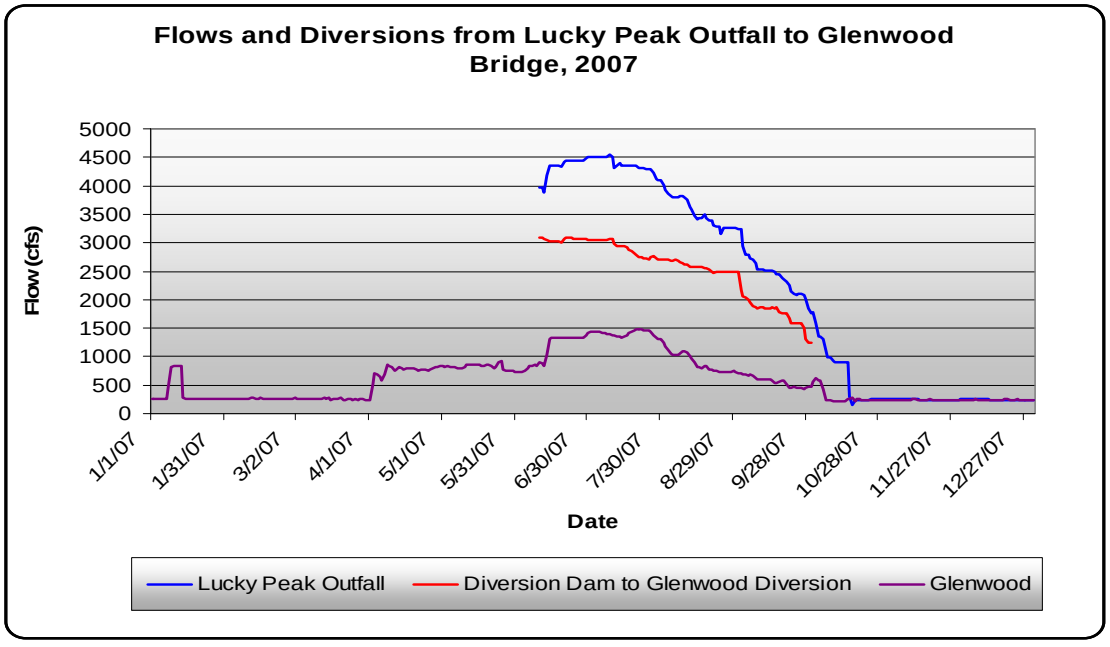


Figure 42. Graph of flow and diversions reported by the USGS for the Lower Boise River between Lucky Peak Dam outfall and Glenwood Bridge, 2007.

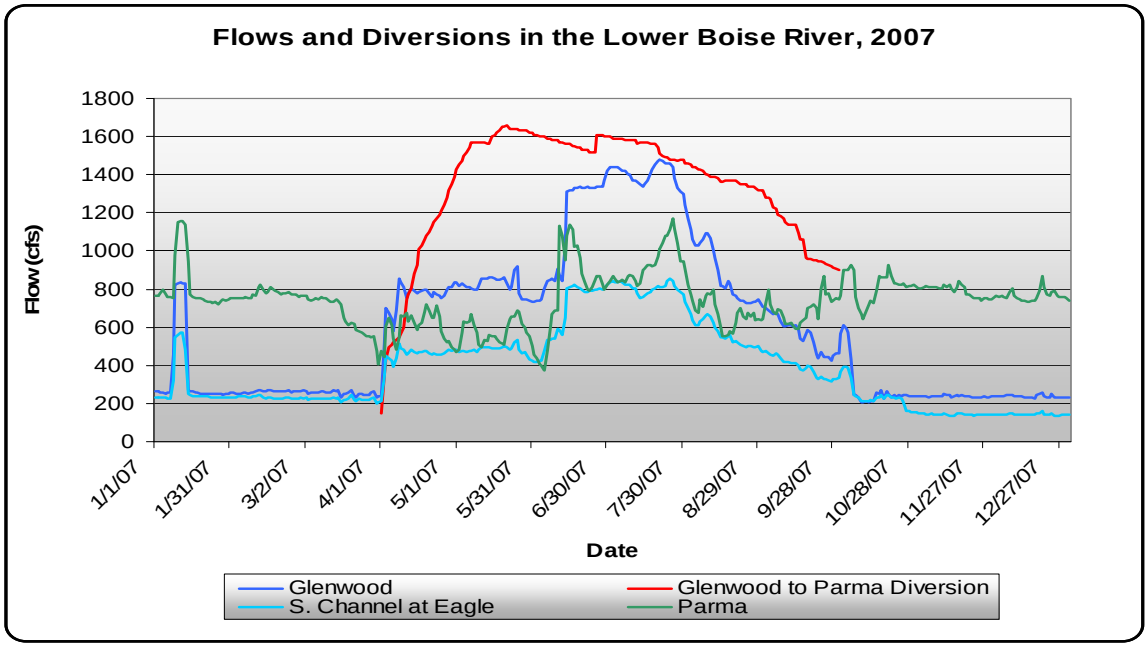


Figure 43. Graph of flow and diversions reported by the USGS for the Lower Boise River between Glenwood Bridge and the mouth, 2007.

Summary of Beneficial Uses

Based on a review of available data the most prevalent factor affecting water quality in the Lower Boise River subbasin appears to be flow and habitat alteration. While this impairment may not be necessarily remedied through the TMDL process negative effects can be mitigated through adoption of flow control practices that more closely resemble natural flow cycles. Federal water project management agencies, subbasin stakeholders and land stewards can address flow and habitat impairment through a variety of restoration projects and BMP implementation.

The second most observed impairment of beneficial use attainment is bacteria, with eight AUs reporting sample results that exceed criteria. Other pollutants determined to be limiting the attainment of beneficial uses (in order of prevalence) are sediment and temperature. Sediment impairment was determined using reported water chemistry analysis of SSC and TSS samples, BURP scores and observations of tributary effluent to the Boise River. There is one AU in the Lower Boise River subbasin (AU 013_03, Dry Creek) that has been determined to be supporting all designated or presumed beneficial uses.

Excursions from maximum temperature criteria were correlated with aquatic community data, where available, to determine or confirm impairment by elevated water temperatures. An evaluation of reported benthic macroinvertebrate sample data indicates the largest proportion of benthic macroinvertebrate organisms in the Boise River subbasin appear to favor warm water temperatures; with more than 80% of the identified organisms near Middleton categorized as tolerant of hot water. While Tier II data cannot be used to make use determinations, the aquatic community temperature tolerance does

correlate with the pattern of diversions and the warming of diverted water before the water is returned to the mainstem between Star and Caldwell; with water temperatures cooling in the mainstem as more flow and groundwater effluent is received by the mainstem channel downstream of Middleton.

Concentrations of bacteria and sediment can be directly related to land use practices in the subbasin, with elevated concentrations of bacteria occurring more often near areas with active animal feeding operations, and sediment concentrations increasing near areas that are irrigated by gravity flow systems. These are all issues that were addressed in the TMDL implementation plan in 2003. Table 19 summarizes the results of the review of the subbasin and data collected by agencies and organizations with land management responsibilities (Table 12).

Status of Beneficial Uses

Current designated beneficial uses, listing status, impairments, and recommendations for the next integrated report are identified for each AU listed on the impaired waters list of the draft 2008 Integrated Report and summarized in Table 19.

Table 19. Summary of assessment units, draft 2008 Integrated Report, existing TMDLs, and five-year review results.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
001_02	Unnamed 1st and 2nd order tributaries to Boise River between Indian Creek and the mouth.	Temperature	Riparian area 2 and 3 from the TMDL including paleo oxbow lakes of the Boise River. Channels have been constructed to irrigate and drain cultivated fields; remnant wetlands and ponds remain.	Add to Section 3 as unassessed. Collect data to verify listed impairments. Add to Section 4c for flow and habitat alteration.
001_06	Boise River 6th order from Indian Creek to the mouth, and tributaries to the 6th order.	Temperature	Paleo meanders of the Boise River, modified by diversions and drains for agricultural uses. Diversions remove 76% of summer flow. Temperature and geomean bacteria data exceed criteria. Sediment data exceeds TMDL targets.	Add to Section 4c for flow and habitat alteration.
002_04	Indian Creek 4th order from Phyllis Canal to mouth.	Temperature, Bacteria	Data exceed TMDL targets for sediment and criteria for bacteria, and temperature. All other criteria are met. Confined channel and de-vegetated riparian zones in urban impact area.	Add to Section 5 for sediment. Schedule a TMDL for bacteria and temperature. Add to Section 4c for flow and habitat alteration.
003_02	North Indian Creek, 1st and 2nd order.	Sediment, Bacteria, Nutrients	Ephemeral or intermittent, channels with numerous dams.	Add to Section 3 as unassessed and collect data to determine use designation and status. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
003_03	Indian Creek 3rd order, upstream of Sand Creek.	Sediment, Temperature, Nutrients	BOR data indicates criteria and TMDL targets are met when flow is present. BURP data indicates dry streams for 2 out of 3 sampling events. Constructed flow controls, ephemeral and intermittent streams, many impoundments.	De-list for sediment, temperature, nutrients. Add to Section 4c for flow and habitat alteration.
003a_04	Indian Creek 4th order from Sand Creek to Phyllis Canal.	Sediment, Temperature, Unknown, DO	Data exceed criteria for temperature. All other criteria are met. Channelized, irrigation diversions, wastewater drains.	De-list for sediment, unknown and DO. Schedule a temperature TMDL. Add to Section 4c for flow and habitat alteration.
005_02	First and second order unnamed streams or tributaries to the Boise River from Glenwood Bridge to Mason Creek.		Secondary or abandoned channels and cut- off meanders of the mainstem Boise River, modified for agricultural uses (Miller canal) or urban development. Numerous diversions and drains, two large gravel mines.	Add to Section 3 as unassessed and Section 4c for flow and habitat alteration. Collect data to determine uses and water quality status.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
005_06	Boise River 6th order, and tributaries to 6th order, from Glenwood Bridge to Mason Creek.	Temperature	Data indicate temperature exceeds criteria; and bacteria exceeds criteria and TMDL targets. Confined channel, diversions, streamside rapid infiltration basins/impoundments, industrial activity, de-vegetated riparian zone, irrigation and industrial drains, urban development.	Add to Section 4c for flow and habitat alteration.
006_02	Mason Creek source to mouth.	Sediment, Unknown, DO, Nutrients	Data indicate sediment and bacteria exceed criteria and TMDL LAs. All other data is within criteria. Confined Channel, diversions, drains, de-vegetated riparian zone.	De-list for DO, nutrients and unknown. Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.
007_02	Fifteenmile Creek, 1st and 2nd order and tributaries.		Data for bacteria exceed criteria and sediment exceeds TMDL targets. Channel is constructed, or modified to appear constructed, for agricultural purposes.	Add to Section 5 for bacteria and sediment. Add to Section 4c for flow and habitat alteration.
007_04	Fifteenmile Creek, 4th order and tributaries to the 4th order.		Data indicate sediment and bacteria exceed criteria, and all other criteria are met. Channel is constructed, or modified to appear constructed, for agricultural purposes.	Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.
008_02	1st and 2nd order tributaries to Tenmile Creek.		Ephemeral or intermittent channels, one spring and wetland. Several dams, 14 rapid infiltration basins near industrial sites, sand/gravel mines, isolated cultivated agricultural sites.	Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
008_03	Third order Tenmile Creek.	Bacteria, Unknown, Nutrients	Data indicate sediment and bacteria exceed criteria, and all other criteria are met. Numerous dams and reservoirs, and riparian modification for agriculture.	De-list for unknown and nutrients. Add to Section 5 for sediment. Schedule a TMDL for bacteria. Add to Section 4c for flow and habitat alteration.
009_02	Blacks Creek 1st and 2nd order.	Habitat Alteration	Intermittent and ephemeral streams, dams and flow controls.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
009_03	Blacks Creek 3rd order.	Habitat Alteration	Intermittent flow, flow control structures. Removed from BOR's management plan because of poor storage potential and flow conditions. Reservoir is managed by IDFG.	Add to Section 3 as unassessed. Collect data to identify existing uses and water quality status. Add to Section 4c for flow alteration.
010_02	Fivemile Creek 1st and 2nd order.	Bacteria	No data to support listing for bacteria. Intermittent and ephemeral channels. Stream has been modified to support canal system, parts of channel completely obscured by ag/urban development.	Add to Section 3 as unassessed. Collect data to determine water quality status. Add to Section 4c for flow and habitat alteration.
010_03	Fivemile Creek 3rd order.	Unknown, DO, Nutrients, Habitat Alteration	Data indicate exceedance of sediment and bacteria criteria. Channelization for ag/urban development.	De-list for DO, nutrients and unknown. Add to Section 5 for sediment and bacteria. Add to Section 4c for flow alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
011a_02	1st and 2nd order tributaries to Boise River from Barber Dam to Glenwood Bridge.		Ephemeral or intermittent streams, a few small springs, dams and impoundments. Remnant rapid infiltration basins on banks of Boise River. Streams are not tributaries to the river.	Add to Section 4c for flow and habitat alteration.
011a_06	Boise River from Barber Dam to Glenwood Bridge.	Temperature	Temperature criteria for salmonid spawning are exceeded every spring and most fall months. Criteria for pH, sediment, bacteria, DO, and ammonia are met. Flow control structures and diversions, near-stream impoundments, removal of riparian vegetation, wastewater drains. Includes Riparian area 1 from the TMDL.	Add to Section 4c for flow and habitat alteration.
011b_02	1st and 2nd order streams and tributaries near outfall of Lucky Peak Dam.		Dams and impoundments in the headwaters and near the valley floor. The only tributary to the river is at the base of the dam and may flow in response to that structure.	Add to Section 4c for flow and habitat alteration.
011b_06	Boise River between Lucky Peak outfall and Diversion Dam.	Flow Alteration	Data indicate that criteria area met for temperature, pH and DO. Flow control structures, diversions and urban development have modified habitat.	Add to Section 4c for habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
012_02	Stewart Gulch, Cottonwood and Crane Creeks, 1st and 2nd order.	Habitat Alteration	Cottonwood Creek is intermittent, based on USGS recent flow records for AU 012_03. Springs are developed and impounded, or diverted from natural channels. Flood control structures—sediment and overflow basins-- dating from the early 1900's prevent mass wasting and reduce sediment loads to the river.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
012_03	Stewart Gulch, Cottonwood and Crane Creeks, 3rd order to mouth.	Habitat Alteration	Streams are modified with flood control structures and diversions. Flow is directed through pipes and flumes to the Boise River.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
013_02	1st and 2nd order Dry Creek and tributaries.		Flow control structures and reservoirs in tributaries to Currant Creek.	Add to Section 4c for flow alteration.
013_03	3rd order Dry Creek and tributaries.		Data indicate that all criteria are met. Flow control structures and channel modification to accommodate agriculture and urban development.	Add to Section 2 as supporting presumed uses.
013_04	4th order Dry Creek.		Flow control structures, channel modification, ag/urban development, gravel mine, and numerous impoundments.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
014_02	Big/Little Gulch Creek Complex		Flow control structures and channel modifications to accommodate agriculture.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
015_02	South Fork Willow Creek.	Habitat Alteration, Temperature	Ephemeral or intermittent streams. Flow control structures and impoundments.	Collect data to determine existing uses and water quality status. Add to Section 4c for flow alteration.
015_03	Willow Creek, North Fork Willow Creek, and unnamed tributaries.	Temperature, Habitat Alteration	Data indicate bacteria exceeds criteria and TMDL targets, and all other criteria are met. Channelized for ag/urban development, dewatered stream segments.	De-list for temperature. Add to Section 5 for bacteria. Add to Section 4c for flow alteration.
016_02	Langley/ Graveyard Gulch complex		Appears to drain to the Payette River subbasin. Flow control structures and channel modification to accommodate agriculture.	Initiate review to determine possibility that landforms drain to HUC 17050122. Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	2008 Draft List Pollutant	Summary of Data and Observations	Recommended Changes to Next Integrated Report
016_03	Langley/ Graveyard Gulch complex	Sediment, Unknown, Nutrients, DO	Most streams are ephemeral, 3 or 4 springs, no defined natural stream channels. No data to support listing. Constructed and modified channels to accommodate agriculture.	Add to Section 3 as unassessed. Collect data to determine existing uses and water quality status. Add to Section 4c for flow and habitat alteration.
017_02	1st and 2nd order Sand Hollow Creek and tributaries.		Data indicate all criteria are met. Constructed and modified channels to accommodate agriculture.	 Add to Section 4c for flow and habitat alteration.
017_03	Sand Hollow Creek 3rd order and tributaries	Sediment, Unknown, DO	Data indicate sediment exceeds TMDL targets. All other criteria are met. All streams are modified to facilitate agriculture.	De-list for DO and unknown. Schedule a sediment TMDL. Add to Section 4c for flow and habitat alteration.
017_06	Sand Hollow Creek	Sediment, Nutrients, DO, Unknown	Data indicate that bacteria exceed criteria and sediment exceeds TMDL targets and criteria. Channelized, flow control structures, impoundments, diversions, and irrigation drains.	Add to Section 5 for sediment and bacteria. Add to Section 4c for flow and habitat alteration.

Summary of Recommendations

Because the draft 2008 Integrated Report was not approved before development of this review, the final 2008 Integrated Report may not reflect recommendations made in this report. All recommendations for the next Integrated Report refer to the 2010 Integrated Report. The following paragraphs are brief explanations of the recommendations summarized in Table B. Because all of the AUs discussed in this review are in the Lower Boise River subbasin, (HUC 17050114) the AUs will be referred to by the numerical suffix assigned to each AU in Idaho's WQS. For example, the AU identified in Idaho WQS as ID17050114SW001_02 is abbreviated to 001_02. The following paragraphs are brief explanations of the beneficial use attainment status of each AU and the rationale used in offering recommendations for the next integrated report. Designated beneficial, existing, and presumed uses; WQS; and criteria for each AU are defined and summarized in Section 3 of this document. Some AUs received LAs in the TMDL because it was determined that the AU may be contributing, in a cumulative manner, to impairment of the stream segment of concern to the TMDL. An LA is not equivalent to a listing of impairment.

001_02

This AU includes 2 unnamed 1st order tributaries to the Boise River between Indian Creek and the mouth (including Riparian Area 2 and 3 of the TMDL) and is in Section 5 of the draft 2008 303(d) list for temperature. Beneficial uses are not designated and are presumed to meet cold water aquatic life (COLD) and primary and secondary contact recreation (PCR/SCR) uses. A review of satellite photo images from 2006 indicate that this AU is primarily remnant channels and oxbows of the Boise River that have been modified to irrigate and drain agricultural lands surrounding a large wetland. No temperature data is available to verify the listing in the draft 2008 Integrated Report.

This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat alteration. Data should be collected to determine appropriate use designation and water quality status.

001_06

This AU includes the Boise River 6th order segment from Indian Creek to the mouth and unnamed tributaries to the 6th order segment. The designated uses for this AU are COLD and PCR and it is listed in the draft 2008 Integrated Report for temperature and has approved TMDLs for sediment and bacteria (DEQ, 1999). There are four control monitoring locations for the TMDL in this AU. Data has been collected from three of these locations in the past five years. The WQS for PCR have changed since the TMDLs were developed to an *E. coli*-based standard for bacteria.

Water District 63 controls flows through diversions and drains. Diversions total 1,600 cfs (76%) in an average July and drains are not monitored. Numerous canals and drains have been constructed and urbanization has resulted in modified channels throughout the AU.

The U.S. Geological Survey (USGS) and the City of Boise have collected water quality data over the past five years that indicate the temperature of the Boise River in this AU exceeds criteria and geomean bacteria results exceed criteria. Two drains have been monitored for water quality: Dixie Drain and Conway Gulch. Data from these drains indicate temperature, sediment, and instantaneous bacteria criteria are exceeded; and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Conway Gulch contributes more sediment and phosphorus than Dixie Drain and Dixie Drain contributes more bacteria than Conway Gulch. Sediment and bacteria LA targets established in the TMDL (DEQ, 1999) have not been achieved in this AU.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

002_04

This AU includes Indian Creek 4th order from Phyllis Canal to the mouth, Caldwell Highline Canal and Notus Canal. The designated uses are COLD and SCR and the AU is listed as impaired by temperature and bacteria in the draft 2008 Integrated Report. There is one control monitoring location in this AU for the TMDL and an LA for bacteria and sediment at the confluence with the Boise River. The WQS for SCR have changed since the TMDLs were developed, to an *E. coli*-based standard for bacteria.

The stream has been straightened and confined and the riparian zone has been de-vegetated through the urban area. Agricultural drains and industrial and municipal effluent contribute to streamflow in this AU.

The USGS and the Idaho State Department of Agriculture (ISDA) have collected water quality data from the control monitoring location over the past five years and reported results indicate that instantaneous bacteria and sediment criteria and TMDL targets are exceeded in this AU. There are also sediment plumes from the confluence into the Boise River visible in satellite images. Phosphorus data indicate that concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Dissolved oxygen (DO) and pH are within criteria.

The city of Nampa collected data above and below the WWTP from 2003 through 2007 in compliance with permit requirements. The data indicate that sediment, DO and pH are within criteria at the WWTP. Temperature criteria is exceeded in summer and fall months upstream of the WWTP. Because the temperature data collected by the USGS in 2005 was always collected in the morning and there are only 5 data points in that dataset, the data from the City of Nampa was more useful in making a determination for temperature in this AU.

This AU should be listed in Section 5 for sediment, listed in Section 4c for flow and habitat alteration and a TMDL for bacteria and temperature should be scheduled.

003_02

This AU includes North Indian Creek and 1st and 2nd order streams and tributaries. Slater Creek, Cow Creek, Sheep Creek, Ridenbaugh Canal, North Indian Creek, West Fork Slater Creek, Sand Creek and East Fork Slater Creek are in this AU. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. The AU is listed in the 2008 draft Integrated Report for sediment, bacteria and nutrients.

There is no evidence of anything more than ephemeral flow east of Pleasant Valley Road, in Ada County. Some evidence of intermittent flow is present between Pleasant Valley Road and South Cole Road, in Ada County. There are three flow control structures in Caldwell Draw and one in Slater Creek. East of South Cole Road, North Indian Creek is impounded, with no observed flow below the dam. There is no evidence of flow in the channel west of the impoundment until Cloverdale Road, where another large impoundment has been constructed in the stream channel just south of Kuna-Mora Road, on the east side of Cloverdale Road. North of Kuna-Mora Road the channel of North Indian Creek has been obliterated by cultivated fields, and meander scars are still visible in satellite images. Several impoundments have been constructed throughout the AU, and very little water is visible in the basins.

Water quality data is not available for this AU and attempts to collect BURP data in 2007 failed due to dry stream conditions. Based on a review of available data, it is recommended that this AU be scheduled for a thorough assessment of existing conditions to determine correct designation of beneficial uses and water quality status. This AU should be listed in Section 3 as unassessed and Section 4c for flow and habitat alteration in the next Integrated Report.

003_03

This AU includes the 3rd order of Indian Creek, upstream of Sand Creek (including Indian Creek Reservoir), 3rd order of North Indian Creek, Sand Creek and unnamed tributaries. Indian Creek Reservoir was constructed before the existence of federal land management agencies and is managed by the Idaho Department of Fish and Game (IDFG) as a warm water fishery. The designated uses of this AU are COLD and SCR and it is listed in the draft 2008 Integrated Report for sediment, temperature and nutrients. Some unnamed streams, and possibly a portion of Indian and North Indian Creek, may be intermittent.

In addition to numerous small impoundments on Indian Creek, there are three dams and two impoundments in Caldwell Draw (between Sheep and Indian Creeks) and one in Sheep Creek that appear to capture all available surface water. The IDFG frequently promotes salvage fishing from Indian Creek Reservoir in dry years and waits until a relatively wet year to restock the reservoir. The reservoir was classified by the IDFG as "dry" from 2001 through 2006.

In 1999, the Bureau of Reclamation (BOR) collected water quality data from the inlet of the reservoir and from Indian Creek above the confluence with the New York Canal.

BOR data indicate that criteria and TMDL targets for the Lower Boise TMDL are met at the sample locations when flow is present. While the data is too old to be used for use determination in accordance with WBAG II (Grafe, et al., 2002), it can be used as Tier II data.

It is recommended that this AU be de-listed for sediment, temperature and nutrients, assessed for use modification to MOD (not yet approved by EPA) and SCR and listed in Section 4c of the next Integrated Report for flow alteration.

003a_04

This AU includes Indian Creek 4th order from Sand Creek to Phyllis Canal and tributaries to the 4th order segment. The designated uses of this AU are COLD, salmonid spawning (SS) and SCR, and it is listed in the draft 2008 Integrated Report for sediment, temperature, DO and unknown. Sand and North Indian Creeks and unnamed tributaries appear to be ephemeral streams. Some unnamed streams, and possibly a portion of North Indian Creek, may be intermittent. There is a dam and a reservoir at the confluence of Sand and Indian Creeks and numerous channel modifications and impoundments in Indian Creek downstream of Sand Creek.

DEQ collected BURP data (including fish and macroinvertebrate data) from this AU in 2003 that resulted in a low score and a determination that aquatic life beneficial uses are not supported in this AU (BURP Site ID 2003SBOIA051). DEQ also collected data in 2008 which indicate that water temperature in the spring exceeds criteria and one *E. coli* sample exceeded the single sample criteria, but no geomean data has been collected. All other data are within criteria.

This AU should be de-listed for sediment, DO and unknown; scheduled for a temperature TMDL and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

005_02

This AU includes the 1st and 2nd order unnamed streams or tributaries to the Boise River from Glenwood Bridge to Mason Creek, and the Miller canal. The beneficial uses are not designated and are presumed to support COLD and SCR/PCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. There is no water quality data for this AU and a review of satellite images indicates that these streams are secondary or abandoned channels and cut-off meanders of the mainstem Boise River that have been modified for agricultural uses or urban development. There are numerous diversions and drains and two large gravel mines in this AU and the land uses are cultivated agriculture, industrial and suburban.

This AU should be added to Section 3 as unassessed, listed in Section 4c of the next Integrated Report for flow and habitat alteration and should be assessed to determine appropriate beneficial use designation and water quality status.

005_06

This AU includes Boise River 6th order, from Glenwood Bridge to Mason Creek and unnamed tributaries to the 6th order mainstem river, including the Phyllis Canal. The designated uses of this AU are COLD, SS and PCR and it is listed in the draft 2008 Integrated Report as impaired by temperature. The mainstem river in this AU has approved TMDLs for sediment and bacteria. There are 10 TMDL control monitoring locations in this AU and data has been collected from five of these in the past five years. Discharge (flow volume), suspended sediment and bacteria data have been collected from two control monitoring locations by the USGS and ISDA between 2003 and 2008. The implementation plan specified plans for geomean bacteria data to be collected at control monitoring locations to determine compliance with the TMDL and geomean data was collected by the city of Boise in 2005. In addition to the constituents monitored for existing TMDLs, the city of Boise has collected continuous temperature data from the Boise River control monitoring location from 2003 to 2008.

The perennial streams in this AU have been modified to facilitate agricultural activities with numerous diversions and drains and urban development has encroached into the floodplain of the mainstem river and has fostered devegetation of riparian zones along deepened and channelized streams. Between Glenwood Bridge and Parma, 76 to 89% of the flow is diverted every irrigation season, with an estimated 50% of that flow returning to the mainstem river between Star and Caldwell (BOR, 2008).

Results of data collection reported by the USGS and the City of Boise indicate that geomean bacteria criteria are exceeded in the Boise River above Middleton and near Caldwell. Single-sample (instantaneous) bacteria criteria are exceeded in Mill Slough, but no geomean samples have been collected. Temperature data reported by all data collection agencies indicate that temperature criteria for SS are exceeded in the mainstem Boise River above Middleton every spring, and some years in the fall months. This pattern is evident from data collected at Mill Slough also.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

006_02

This AU includes Mason Creek from source to mouth, including Kuna Canal, New York Canal, Mason Slough and Mason Creek Feeder. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report for sediment, unknown and DO. This AU has LAs and two control monitoring locations for sediment and bacteria in the TMDL, at the confluence with the Boise River. The stream channel is visibly confined with numerous diversions and drains and the riparian zone has been de-vegetated to allow for urban development.

The USGS and ISDA have collected data from one TMDL control location between 2003 and 2008 and DEQ collected BURP data from this AU in 2003 (BURP Site ID 2003SBOIA050). Based on the sample results reported by the data collection agencies, sediment and bacteria exceed criteria and TMDL targets. Reported values of DO and

temperature are within criteria. The BURP scores, which include fish and macroinvertebrate data, were low and resulted in a determination that aquatic life and recreation beneficial uses are not supported in this AU.

In the next Integrated Report, this AU should be de-listed for DO and nutrients, listed in Section 5 for bacteria and sediment and listed in Section 4c for flow and habitat alteration.

007_02

This AU includes the first and second order unnamed streams in the Fifteenmile Creek watershed. Beneficial uses are not designated and are presumed to meet COLD and SCR/PCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. This AU begins at the confluence of Tenmile and Fivemile Creeks, near the intersection of Linder and Franklin roads in Ada County and parallels the Highline Canal. The ISDA collected water quality data from this AU in 2008 and Tenmile and Fivemile Creeks are listed in the draft 2008 Integrated Report as impaired for bacteria and nutrients. This stream is a constructed channel or has been modified by agriculture and urban activities so that it appears to be entirely constructed.

Results of data collected by the ISDA indicate that single-sample (instantaneous) bacteria criteria are exceeded more than 50% of the time, but no geomean samples have been collected. Results of suspended sediment analyses indicate that short-term and long-term TMDL targets are exceeded in this AU and criteria appear to be exceeded. Phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria appear to be met.

Based on the information reviewed for this report, this AU should be listed in Section 5 for sediment and bacteria and Section 4c of the next Integrated Report for flow and habitat alteration. This AU should also be assessed for appropriate designation of uses.

007_04

This AU includes the 4th order of Fifteenmile Creek and unnamed tributaries. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report as unassessed. LAs for sediment and bacteria were assigned to one location in this AU with one control monitoring location. Water quality data is available for this AU and Tenmile and Fivemile Creeks (headwater source) are listed in the draft 2008 Integrated Report as impaired for bacteria and nutrients.

This stream is a constructed channel or has been modified by agriculture and urban activities so that it appears to be entirely constructed. There are at least four diversions and numerous drains in this AU, which are used for agricultural purposes. Water quality data collected by the USGS in the summer of 2005 indicate that bacteria concentrations exceed the single-sample criteria, but geomean data has not been collected. All samples

collected exceed the TMDL 60-day maximum target for suspended sediment, and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other reported values (temperature, pH and DO) are within standards.

Based on information reviewed for this report, this AU should be listed in Section 5 for bacteria and sediment, and in Section 4c for flow and habitat alteration, in the next Integrated Report.

008_02

This AU includes 1st and 2nd order streams in the Tenmile Creek watershed. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report as unassessed. There is no water quality data for this AU but a review of satellite images indicates that most of the streams are ephemeral or intermittent, with the exception of one spring and wetland. There are several dams that appear to have dry or nearly dry impoundments, 14 rapid infiltration basins near industrial sites and at least nine sand/gravel mines. There are a few isolated cultivated agricultural sites.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration and data should be collected to determine the appropriate beneficial use designation and water quality status.

008_03

This AU includes the third order of Tenmile Creek, downstream of Blacks Creek Reservoir. It is designated for beneficial uses of MOD (not yet approved by EPA) and SCR and is listed in the draft 2008 Integrated Report for bacteria, nutrients and unknown. LAs for sediment and bacteria at the mouth of Tenmile Creek were established in the TMDL. There are numerous dams and impoundments and the riparian zone has been modified for agricultural uses.

Data has been collected by the USGS four times between 2003 and 2008. Based on reported results, Tenmile Creek exceeds single-sample bacteria criteria and TMDL targets for sediment. Data to calculate bacteria geomean values has not been collected. Phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. No other impairments are documented.

It is recommended that this AU be de-listed for unknown and nutrients, listed in Section 5 for sediment and in Section 4c of the next Integrated Report for flow and habitat alteration. A bacteria TMDL should be scheduled.

009_02

This AU includes Blacks Creek 1st and 2nd order streams to the reservoir, Bryans Run and unnamed tributaries, and is listed in the draft 2008 Integrated Report for habitat alteration. Beneficial uses are not designated and the AU is presumed to meet COLD and PCR/SCR uses. A review of satellite images indicates that most of this AU is intermittent or ephemeral, with three pools in the main channel of Blacks Creek, but no flowing water. Bryans Run contains two constructed flow control features and three unnamed tributaries have constructed impoundments, but no free-flowing water. Water quality data has not been collected from this AU in the past five years, and BURP samples from 1996 (1996SBOIA055) and 1998 (1998SBOIA006) indicate that dry stream conditions dominate this AU in the spring and summer months.

This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report. Data should be collected to determine appropriate beneficial use designation and water quality status.

009_03

This AU includes Blacks Creek 3rd order, which encompasses Blacks Creek Reservoir to the headwaters of Tenmile Creek. The AU is not designated and is presumed to meet beneficial uses of COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report for habitat alteration. There are three dams and impoundments in this AU and flow appears to be ephemeral in most years and intermittent in years with above average precipitation. Blacks Creek Reservoir is fed by ground water and is owned by the Bureau of Land Management (BLM) and private parties and managed by IDFG.

The IDFG has designated the area as an important bird area (IBA) and is working with the BLM Four Rivers Field Office and the Land Trust of Treasure Valley to recover and restore the ecology of the watershed. The watershed has been damaged by unregulated recreation use, which has resulted in refuse dumping, avian poaching, destructive off-road vehicle use, over-grazing, housing developments and invasive weeds.

Water quality data has not been collected from this AU in the past five years and BURP data collected in 1998 (1998SBOIB005) reports conditions common to intermittent waters. Data should be collected to determine appropriate beneficial use designation and water quality status. This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report.

010_02

This AU includes 1st and 2nd order Fivemile Creek, Eightmile Creek and unnamed tributaries and is intersected by Interstate 84 southeast of the city of Boise. Beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for bacteria.

Water quality data has not been collected from this AU since BURP surveys documented dry stream conditions in 1998 (1998SBOIB007). Satellite images indicate that except for one or two small springs, the streams are ephemeral and may flow intermittently to West Gowen Road, where Fivemile Creek intersects the New York Canal. West of the New York Canal, the stream channel flows during the irrigation season through a mix of urban and suburban private land parcels. The stream has been straightened and deepened to support the intricate subbasin canal system. There is no riparian vegetation in this AU and it is uncertain what the natural channel morphology may have been, absent the extensive modifications now present. Agriculture and urban development of the cities of Boise and Meridian have almost completely obscured the natural stream channels throughout the remainder of the AU, which ends near the intersection of Overland and S. Eagle roads in Ada County.

Data should be collected from this AU to determine appropriate use designation and water quality status. This AU should be added to Section 3 as unassessed and listed in Section 4c for flow and habitat modification in the next Integrated Report.

010_03

This AU includes the 3rd order of Fivemile Creek, which is a brief stream segment from the confluence of Eightmile Creek to the confluence with Fifteenmile Creek. The designated beneficial uses of this AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for habitat alteration, DO and unknown pollutants. LAs for sediment and bacteria at the mouth of Fivemile Creek were established in the TMDL, but this stream was not listed as impaired when the TMDL was developed.

DEQ collected BURP data in 2003 (2003SBOIA052) that resulted in a low score and a determination of non-support of beneficial uses. The stream was dry when BURP sampling was attempted in 2005 (2005SBOIP009) and 1996 (1996SBOIA042). The USGS collected water quality data in the summer of 2005 that indicate that Fivemile Creek exceeds single-sample bacteria criteria and TMDL targets for sediment. Geomean bacteria data has not been collected. Reported results of phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. Data collected over the same time period indicate that Fivemile Creek does not exceed criteria for temperature, DO, or pH. The same alterations to the channel and riparian habitat that were discussed for AU 010_02 are evident in this AU.

This AU should be de-listed for DO and unknown pollutants and listed in Section 5 for sediment and bacteria, and Section 4c for flow and habitat modification in the next Integrated Report.

011a_02

This AU includes Squaw Creek, Warm Springs Creek, Maynard Gulch and unnamed 1st and 2nd order streams north of the Boise River near Barber, Idaho. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU and satellite images indicate that except for a few small springs, the streams are ephemeral or intermittent. In drainages that appear to experience some surface water flow, there are three dams and impoundments near the valley floor. These structures function as flood control structures to prevent mass wasting in the foothills from delivering excessive sediment to the Boise River. There are remnant rapid infiltration basins on the banks of the Boise River.

This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration and data should be collected to determine the appropriate designated beneficial uses and water quality status.

011a_06

This AU includes the Boise River from Barber Dam to Glenwood Bridge, including Phyllis Canal and Riparian Area 1 in the TMDL. The designated beneficial uses of this AU are COLD, SS, PCR, domestic water supply (DWS) and special resources water (SRW), and it is listed in the draft 2008 Integrated Report for temperature. The TMDL established WLAs for sediment and bacteria at each point source, and LAs for bacteria at the control monitoring location at Glenwood Bridge (USGS site 13206000).

The USGS collected instantaneous discharge data at three locations from 2003 through 2008, and during the same time period the city of Boise collected continuous water temperature and geomean bacteria data from three locations: Boise River at Glenwood Bridge, Boise River at Marden Bridge and Boise River at Veterans Parkway. Data collected at Glenwood Bridge indicate that sediment and bacteria targets were not exceeded between 2003 and 2008. Fish data from 2003 indicates that SS is an existing use in this AU.

Temperature data indicate that criteria for SS are exceeded most years from May through July and again in October and November at all three locations monitored by the city of Boise. Instantaneous temperature data collected by the USGS indicate that criteria exceedance is an issue from May through July. The USGS collected benthic macroinvertebrate data at the control monitoring location, but not during the time of year that can be used to determine use attainment status. DO and ammonia concentrations were within criteria for all samples and the pH criterion was exceeded once between 2003 and 2008. Phosphorus data from this AU may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River.

Flow and habitat in this AU have been modified by dams, reservoirs, diversions, urban encroachment in the riparian zone and point and nonpoint source effluent. Water District

63 is responsible for managing diversions in the Boise River and in most years, 76 to 85% of the flow between Barber Dam and Glenwood Bridge is diverted from the mainstem (BOR, 2008).

The TMDL targets for sediment and bacteria appear to be achieved in this AU. This AU should be listed in Section 4c for habitat and flow alteration in the next Integrated Report.

011b_02

This AU includes 1st order unnamed tributaries to the Boise River below Lucky Peak Dam outfall. The beneficial uses for this AU are not designated and are presumed to support COLD and PCR/SCR uses. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU and satellite images indicate that except for a few small springs, the streams are ephemeral or intermittent. In drainages that appear to experience some surface water flow, there are dams and impoundments in the headwaters and near the valley floor. The only tributary to the river is at the base of Lucky Peak Dam and may flow in response to that structure.

Data should be collected from this AU to determine appropriate use designation and water quality status. This AU should be listed in Section 4c of the next Integrated Report for flow and habitat alteration.

011b_06

This AU includes the Boise River between Lucky Peak Dam outfall and Diversion Dam and the tributaries to this segment of the mainstem river. The designated beneficial uses for this AU are COLD, PCR, DWS, and SRW and it is listed in the draft 2008 Integrated Report as unassessed and impaired by flow alteration. Flows are controlled by the Army Corps of Engineers (ACOE) in accordance with contracts negotiated by the Bureau of Reclamation.

Water quality data has been collected by the USGS from one location between 2003 and 2008. The TMDL targets for sediment and bacteria appear to be met, based on data collected from the Boise River at Diversion Dam. The city of Boise collected continuous temperature data from below the Lucky Peak Dam outfall and the USGS collected flow data from the same location and instantaneous water temperature from the Boise River near Diversion Dam. The data indicate that temperature, DO, and pH criteria are met in this AU. Ammonia, phosphorus and aquatic life data have not been collected.

It is recommended this AU be de-listed for temperature and be listed in Section 4c of the next Integrated Report for habitat alteration.

012_02

This AU includes 1st and 2nd order streams (Stewart Gulch, Hulls Gulch; Fivemile, Picket Pin, Freestone, Crane, Warm Springs and Cottonwood Creeks) on the north side of

the Boise River between AU 011b_02 and the Glenwood Bridge. This AU does not have designated uses and is presumed to meet the beneficial uses of COLD and PCR/SCR. It is listed in the draft 2008 Integrated Report for habitat alteration. Water quality data has not been collected from the AU since 1996, when BURP data was collected from Cottonwood Creek (BURP Site IDs 1996SBOIA015 and 1996SBOIB033).

Water flow was so low (0.4 cfs) during the BURP surveys that data collection was annotated as incomplete. A survey of satellite images of the watershed indicates that most of the streams in this AU are intermittent, and there are a few springs and a couple of gravel/sand mines. Several watersheds have been developed for golf courses and subdivisions and all drainages have been either truncated or straightened and diverted south of Hill Road in the city of Boise.

The city of Boise has installed several flood management structures in Cottonwood Creek, Hulls Gulch, Crane Creek and Stewart Gulch to prevent mass wasting, control flooding and reduce sediment loads into the Boise River. There are sediment and overflow basins in the foothills and pipes and flumes in the floodplain that route streamflow to the river. These structures date to the early 1900s through the 1990s and are maintained by the city on a regular basis (personal communication with J. Wiley, city of Boise, 2008).

Data should be collected from this AU to determine appropriate beneficial use designation and water quality status. This AU should be listed in Section 3 as unassessed and in Section 4c for flow alteration of the next Integrated Report.

012_03

This AU includes 3rd order Cottonwood Creek (from Fivemile Creek to the mouth), tributaries to Cottonwood Creek, Farmers Union Canal and tributaries to the Boise River in the Cottonwood Creek watershed. Beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration.

Most of the streams in this watershed have been modified with flood control structures as described for AU 012_02 and flow through impoundments and pipes between the foothills and the river. BURP data was last collected in 1996 by DEQ (BURP Site ID 1996SBOIA014) and flow data has been collected by the USGS from 2002 to 2008. Flow data, and information from the city of Boise Public Works Department (J. Wiley, personal communication, 2008) confirms that Cottonwood Creek is intermittent, with flow occurring November through May in most years.

This AU should be assessed in accordance with the WBAG II (Grafe, et. al., 2002) to determine appropriate use designation and water quality status. This AU should be listed in Section 3 as unassessed and in Section 4c for flow alteration in the next Integrated Report.

013_02

This AU includes 1st and 2nd order Dry Creek and tributaries. Shingle Creek, Currant Creek, Spring Valley Creek, Custer Creek, North Fork Daniels Creek, McFarland Creek, South Fork Daniels and Daniels Creek. Beneficial uses are not designated and presumed uses are COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Water quality data has not been collected from this AU, but a survey of satellite images indicate that there are at least 12 dams and reservoirs/impoundments (most of them in Currant Creek) and the land use around most of the observable springs is residential.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

013_03

This AU includes Dry Creek 3rd order and tributaries, from Daniel Creek to the confluence with Spring Valley Creek, including Currant Creek and Spring Valley Creek. The beneficial uses are not designated and are presumed to be COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. Based on a review of satellite images, most of the streams in this AU appear to be intermittent. Dry Creek and Spring Valley Creek appear to be perennial streams with irrigated cultivated fields filling the floodplain of both streams. The perennial streams appear to be confined and may have been deepened to facilitate agricultural land uses. The ISDA collected data this year (2008) and data indicate that the presumed beneficial uses are met.

This AU should be added to Section 2, as supporting presumed uses, in the next Integrated Report.

013_04

This AU includes Dry Creek 4th order, and tributaries, from Spring Valley Creek to the confluence with the Boise River. The beneficial uses are not designated and are presumed to be COLD and PCR/ SCR. The AU is listed in the draft 2008 Integrated Report as unassessed.

The watershed is sparsely populated, but almost all of the agriculture that requires irrigation occurs on the banks of the streams. A large gravel mine and numerous impoundments exist in the watershed. Close to the confluence with the Boise River. The city of Eagle has expanded and suburban neighborhoods almost fill the southeast half of the watershed with numerous canals and laterals transecting the perennial streams at several locations. Streams in the AU have been channelized to facilitate urban, agricultural, and industrial development.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for habitat and flow alteration in the next Integrated Report.

014-02

This AU includes Big Gulch and Little Gulch Creeks, a complex of intermittent streams, and is listed in the draft 2008 Integrated Report as unassessed. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. Water quality data has not been collected from this AU and a review of satellite images indicate that the streams are ephemeral or intermittent and have been modified by flow control structures. Big Gulch Creek and Woods Gulch each have two dams and reservoirs and one dam is in Little Gulch Creek.

This AU should be assessed to determine appropriate beneficial use designation and water quality status and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

015_02

This AU includes 1st and 2nd order Willow Creek and tributaries. This includes Alkali, Schiller, North and South Fork Willow and Willow Creeks and Middleton Mill Ditch. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration and temperature impairment. The streams in the AU appear to have ephemeral, hyporheic, or intermittent flow patterns and there is a history of frequent wildland fires.

The ISDA has collected water quality data from this AU and BURP data was collected by DEQ in 1996 (1996SBOIA084), 2004 (2004SBOIAA004) and 2005 (2005SBOIA012). Attempts to conduct BURP surveys failed in 1996 because the stream channel was dry, failed in 2004 because access was denied by the landowner (who claimed the stream is always dry) and failed in 2005 because no streambed was visible and urban development was occurring at the sample location. Data collected by the ISDA is too old to be used to determine use attainment status, but indicates that the mainstem of Willow Creek in this AU is usually dry.

North and South Fork Willow and Schiller Creeks have been modified by flow control structures and visibly straightened near cultivated fields. Three dams and impoundments are in the North Fork Willow Creek, two in Schiller Creek, and one in South Fork Willow Creek.

This AU should be assessed to determine appropriate beneficial use designation and water quality status, listed in Section 3 as unassessed and listed in Section 4c for flow alteration in the next Integrated Report.

015_03

This AU includes the 3rd order of Willow Creek, North Fork Willow Creek and tributaries. The beneficial uses are not designated and are presumed to be COLD and

PCR/SCR. The AU is listed in the draft 2008 Integrated Report for habitat alteration and temperature. This AU was assigned LAs for sediment and bacteria in the Lower Boise River TMDL and has one control monitoring location.

A spring complex west of the junction of Pearl and Chaparral roads is visible from satellite images and the mainstem of Willow Creek has been relocated, straightened, and constricted west of the natural channel to accommodate cultivated agriculture. Riparian vegetation density increases and a braided channel reforms downstream of the irrigated fields and springs. Near Highway 16, the mainstem of Willow Creek has been straightened, confined, and possibly deepened to allow for agriculture and low-density suburban development. The stream channel appears to be dry in most places upstream of the intersection with the C-Line Canal, west of Blessinger Lane in Canyon County. Downstream of the canal, the stream channel appears to be one-third the width of the canal and riparian vegetation density varies from substantial to absent through the city of Middleton to the confluence with the Boise River, near Wiffin Lane.

BURP data was collected in 1996 (1996SBOIA083, 1996SBOIA083) which resulted in documentation of a dry stream at the first site and a failing score at the second site. ISDA collected water quality data from this AU in 2008 and the USGS collected data in the summer of 2005 at the LA control monitoring location. Reported sample results indicate that this AU exceeds sediment targets and instantaneous bacteria criteria (geomean data has not been collected), and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria are met.

This AU should be de-listed for temperature and listed in Section 5 for bacteria, and Section 4c of the next Integrated Report for flow alteration.

016_02

This AU includes the Langley/ Graveyard Gulch complex, including the C-Line Canal West, and is listed in the 2008 draft Integrated Report as unassessed. Beneficial uses are not designated and are presumed to meet COLD and PCR/SCR uses. Most of the AU is in Gem County and the primary water bodies are constructed canals delivering water from the Payette River to this portion of the Lower Boise River subbasin.

Water quality data has not been collected from this AU and a review of satellite images indicate that most natural stream channels in the AU are ephemeral in nature and most of the topography is actively cultivated. Features that resemble springs are evident in satellite images, but may be seeps from the canal system. This AU may actually contribute to the drainage area of the Payette River subbasin (17050122).

Data should be collected to determine appropriate beneficial use designation and water quality status and this AU should be reviewed to determine correct HUC designation and listed in Section 4c of the next Integrated Report for flow and habitat alteration.

016_03

This AU includes Langley and Graveyard Gulch, ephemeral streams, and several springs north of the Sand Hollow Creek watershed (AU 017). The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report for sediment, nutrients, DO and unknown pollutants.

All visible natural drainages are either cultivated or channeled and diverted to support cultivation. Most springs have been developed and impounded and are not connected to other surface water bodies. Numerous constructed channels deliver water from the Payette River to irrigated crops and drain used water into AU 017. Water quality data has not been collected from this AU.

Data should be collected to determine appropriate use designation and water quality status and this AU should be added to Section 3 as unassessed and listed in Section 4c of the next Integrated Report for flow and habitat alteration.

017_02

This AU includes 1st and 2nd order streams in the Sand Hollow Creek watershed. This includes the D-Line Canal, Notus Canal and Farmers Cooperative Sebree Canal. The beneficial uses are not designated and are presumed to be COLD and PCR/SCR. The AU is listed in the draft 2008 Integrated Report as unassessed. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. It was not included in the TMDL and does not have LAs or targets for any pollutants. The largest water bodies are constructed canals and drains. Some natural channel remnant features are visible on satellite images, but most have been obliterated by cultivation and the ones that remain have been modified to facilitate agricultural practices.

DEQ collected BURP data in 1996 (1996SBOIA081) and water quality data in 2008. Reported results indicate DO, bacteria, sediment, and temperature are within criteria. It is recommended that this AU be listed in Section 4c flow and habitat alteration.

017_03

This AU includes Sand Hollow Creek 3rd order, from the intersection of Farmway and Oasis roads in Canyon County to the intersection with Parma Drain, near Sharp Lane, in Canyon County. The designated uses of the AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for sediment, bacteria, DO, and unknown pollutants. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. It was not included in the TMDL and does not have LAs or targets for any pollutants.

The channel has been modified to support agricultural canals, laterals, and drains, and the natural channel morphology is almost impossible to identify. There are approximately 6 flow control structures and at least 35 drains delivering agricultural effluent into Sand Hollow Creek in this AU. Upstream of Hwy 20/26, natural meanders are absent, with sinuosity and uncontrolled flow gradually reestablished downstream of Highway 20/26.

DEQ is collecting water quality data in this AU this year (2008). Data indicate that one single-sample bacteria analysis exceeded criteria. Geomean bacteria data has not been collected and DO, pH, and temperature meet criteria. Sediment concentrations exceed TMDL targets and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River.

It is recommended that this AU be de-listed for DO and unknown, scheduled for development of a sediment TMDL, and listed in Section 4c for flow and habitat alteration in the next Integrated Report.

017_06

This AU includes 6th order Sand Hollow Creek from the intersection with Parma Drain to the boundary of the HUC. The designated uses of the AU are MOD (not yet approved by EPA) and SCR and it is listed in the draft 2008 Integrated Report for sediment, nutrients, DO, and unknown pollutants. This stream is a tributary to the Snake River, but is located in the Lower Boise River subbasin. This AU has TMDL LAs for total phosphorus in the Snake River-Hells Canyon TMDL (IDEQ, ODEQ, 2004).

The channel has been straightened and confined to support agricultural land uses and there are at least two flow control structures and three drains delivering agricultural effluent into Sand Hollow Creek in this AU. Some natural sinuosity is preserved and the presence of water in abandoned channels, oxbows, and ponds indicates some hydraulic connection with shallow ground water.

ISDA collected water quality data for this AU in 1998, 1999, and 2008. Data from 1998 and 1999 can be used as Tier II data for use attainment decisions. Data indicate that 85% of single-sample bacteria analyses exceed criteria, but geomean bacteria data has not been collected. Sediment concentrations exceed TMDL targets and appear to exceed criteria, and phosphorus concentrations may exceed recommended concentrations of 0.07 mg/L (Snake River-Hells Canyon TMDL, IDEQ, ODEQ, 2004) for the LA to the Boise River. All other criteria are met.

This AU should be listed in Section 5 for bacteria and sediment and Section 4c for flow and habitat alteration in the next Integrated Report.

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Section 4. Review of Implementation Plan and Activities

Implementation Plan

The TMDL implementation plan (plan), published in 2003, addresses the 1999 sediment and bacteria TMDL, approved in 2000, developed for the four mainstem stream segments of the Boise River listed on the 1996 303(d) list. The plan designates pollution control efforts for point sources, urban and suburban storm water, agricultural nonpoint sources, and other nonpoint sources. The plan includes a watershed implementation schedule with milestones and an estimate of the date that WQS are expected to be met. In order to provide information to the public on water quality issues affecting the subbasin, the WAG maintains an internet site with information on WAG activities, cooperative projects, contracted and related studies and general water quality information. This website can be accessed at http://www.lowerboisewatershedcouncil.org/.

Responsible Parties

The TMDL implementation plan was developed through resource management agency and stakeholder participation in topic-specific workgroups, facilitated by the WAG. The plan includes monitoring locations and targets for the sediment and bacteria TMDL, urban and suburban stormwater control plans, point source control mechanisms and non-point source control plans for the subbasin. The participants included highway districts, water districts, federal land management agencies, cities, counties, industry representatives, private citizens and state agency personnel (Figure 44). All parties share responsibility for implementing the plan.

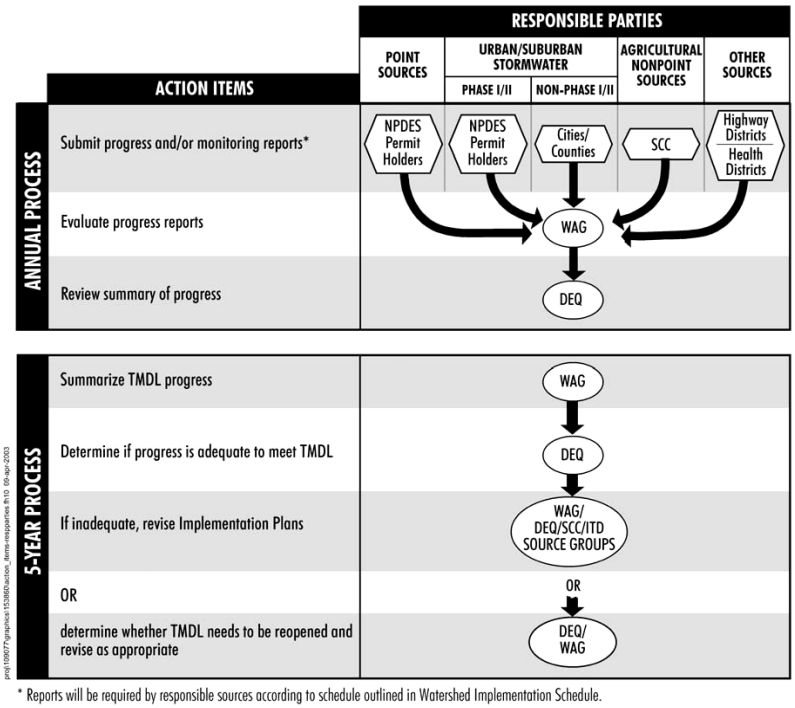


Figure 44. Diagram of participants and activities related to the Lower Boise River TMDL (DEQ, 1999), as copied from Figure 12 of the implementation plan (DEQ, 2003) for the Lower Boise River TMDL.

Planned Activities

In an effort to identify and prioritize pollutant reduction methods, the WAG commissioned studies to determine proportional sources of bacteria throughout the subbasin, develop an effluent trading program and conduct use attainability analyses on several tributaries in the subbasin. These studies were completed by 2003.

Nonpoint source workgroups identified funding as a variable upon which voluntary activities were dependent. The nonpoint source sector representatives stated that, if necessary equipment were replaced as needed and funding remained certain and doubled every 20 years, milestones identified by the group could be achieved and WQS would be attained in 103.1 years. Milestones identified by the group that can be quantified through tracking of BMP implementation and maintenance methods are as follows:

- By 2010, 25 percent of all agricultural producers will have BMPs in place to prevent contributing sediment and bacteria pollution to waters in the subbasin.
- Complete implementation of water quality plans and/or contracts on the initial agricultural acres within 5 years from contract approval.
- Develop water quality plans/contracts and/or other BMP improvements for the next 25 percent of agricultural producers (owners or renters) by Year 20.

To accomplish the goals of the TMDL the nonpoint source sector representatives identified specific management practices that contribute to sediment and bacteria

pollution, and developed a method to prioritize lands and watersheds in the subbasin for BMPs designed to eliminate pollution from nonpoint sources.

Orphan sources of nonpoint source pollution were identified and agencies responsible for sector-specific activities (roads, septic systems, water treatment infrastructure, etc.) identified methods for implementing BMPs that apply to regulated point sources to each nonpoint orphan source.

Point source sector participants are regulated in accordance with federal laws and are subject to enforcement action if found in noncompliance with permit conditions or water quality regulations. These regulated entities identified specific milestones related to achieving permit requirements for stormwater and WWTP NPDES permits. All highway districts, cities, counties and responsible agencies within the subbasin committed to implementing permit-related BMPs and programs and meeting minimum percent removal requirements, even if permits were not currently in place.

The activities identified included developing cooperative partnerships to improve efficiency and share resources, developing adaptive management techniques with measurable goals and integrating plan activities with permit requirements. These activities were planned to be completed and BMPs in place within 6 years (by 2007).

The workgroups identified activities that would support the reasonable assurance requirement of the TMDL. A monitoring plan, implementation tracking database, reporting process and schedule were developed to track progress and establish a feedback loop for the WAG as summarized in Table 20.

Table 20. Roles and responsibilities for reporting on TMDL progress in the Lower Boise River subbasin (as presented in Table 16 of the 2003 implementation plan).

	DEQ	EPA	LBRWQP	USGS	BOR	NPDES Point Sources	NPDES Stormwater Phase I	NPDES Stormwater Phase II	SCC / NRCS	Other Agricultural Entities	Cities	Counties	Health Districts	Highway Districts	COMPASS
Annual Process															
Submit progress and/or monitoring reports															
NPDES Discharge Monitoring Reports						R					V	V			
Annual reports for Phase I							R				V				
Periodic updates for Phase II								R			V	V			
Annual reports for government-funded agricultural BMPs									R						
Periodic reports for privately funded agricultural BMPs									V						
Periodic updates for non-Phase II sources											V	V	V	V	
Monitoring data reports				R	V					V					
BURP data reports	R														
Other monitoring data				V	V				V	V	V				
Evaluate progress reports and monitoring data			V												
Compare progress vs. milestones			V												
Summarize progress			V												
Suggest revised milestones as needed			V												
Public outreach as needed			V												V
Review summary of progress	R	V													
5-Year Process															
Summarize TMDL progress															
Compile annual summaries			V												
Compare progress vs. milestones			V												
Summarize progress			V												
Evaluate attainment of TMDL targets and beneficial uses			V												
Suggest revised milestones as needed			V												
Public outreach as needed			V												V
Determine if progress is adequate to meet TMDL	R	V	V						V						
If inadequate, revise Implementation Plans			R			R	R	R	R	V	V	V	V	V	
OR															
Determine whether TMDL needs to be reopened and revise as appropriate	R	R	R												

NOTES: R = Required Action
V = Voluntary Action

The WAG planned to voluntarily lead the process of reporting and tracking progress, and if needed, consider whether adjustments/revisions are necessary on behalf of subbasin stakeholders. Some of the milestones identified in the plan are:

- Agriculture
  - Report annually on status and results of BMPs installed with public funds on private lands.
  - Track and report privately funded BMPs.
  - Develop water quality plans/contracts/BMPs for 25 percent of agricultural producers by 2010 and 50 percent by 2020; and initiate plans as soon as contracts are approved.
  - Initiate implementation of water quality plans and/or contracts on the initial agricultural acres as soon as contracts are approved.
  - Complete implementation of water quality plans and/or contracts on the initial agricultural acres within 5 years from contract approval.
  - Develop water quality plans/contracts and/or other BMP improvements for the next 25 percent of agricultural producers (owners or renters) by Year 20.
- Highway Districts
  - Determine the need for erosion control plans within one year (by 2001).
  - Train staff to develop erosion control plans by year two (2003).
  - Develop Cooperative Management Plan for agricultural activities within 3 years (by 2004) and form cooperative agreements with other agencies to implement BMPs required under municipal separate storm water system (MS4) permits (by 2006).
  - Develop BMP Manual for Road Maintenance Activities.
- Monitoring Program
  - Point sources will perform monitoring related to permit requirements
  - Nonpoint source monitoring will be performed by ISDA and will monitor results of implementation on agricultural lands and report annually on TMDL progress. This will include BMP effectiveness and maintenance monitoring for every BMP project.
  - Ada County Highway District (ACHD), city of Boise, Drainage District 3, Boise State University, Idaho Transportation Department region 3 will monitor as required by the stormwater NPDES permit.
  - Smaller stakeholders (Caldwell, Nampa, Nampa Highway District, Canyon Highway District, and Notus-Parma Highway District) may implement monitoring as part of the voluntary implementation of minimum permit requirements.
  - Stakeholders and agencies will monitor and document their progress and will provide the information annually to DEQ.
  - DEQ is responsible for long-term monitoring of a jointly funded (USGS, WAG, BOR, and DEQ) monitoring program designed to evaluate the lower Boise River and its tributaries. The WAG and BOR and USGS will direct and fund the program after 2003.

  - ISDA and the USGS will monitor tributaries and mainstem locations after 2002 and DEQ will add priority tributaries to the BURP schedule for 2003.
  - DEQ will summarize four issues on a 5-year cycle: TMDL implementation effectiveness; point source compliance with NPDES permits; subbasin water quality; and overall status of beneficial use attainment of the subbasin.
- Data Analysis
  - Analysis of available monitoring data will be performed every five years by DEQ to determine effectiveness of BMP measures and progress toward TMDL attainment.
  - Results will be used to recommend or discourage future projects.
  - Monitoring parameters will be modified to reflect any new or revised standards.
  - Substrate monitoring will receive DEQ participation if EPA re-initiates the project abandoned in 2000.
  - Data gaps will be addressed as resources allow.
  - A tracking database for nonpoint source projects was planned to mirror the existing Soil Conservation Commission (SCC) tracking database.

All of the items identified in the plan are contingent on funding. Activities required to reduce pollutant loads to the lower Boise River require investment on a consistent long term basis in order for TMDL targets to be achieved and maintained. The tracking and reporting method specified in the implementation plan established an annual and a five-year reporting process, with regulatory agencies or permitted facilities required to track and report and all other participants committing to voluntarily track and report as described in the plan. In order to assess progress toward TMDL targets, a monitoring plan was to be developed and enacted. Results of the monitoring effort were to be reported to the WAG yearly and the WAG would include those results in its annual report to DEQ.

Accomplished Activities

Stormwater is regulated at the federal level and the implementation plan recognizes that when required BMPs are implemented through the federal permit system, stormwater contributions of pollutants to impaired waters in the subbasin will diminish. In order to achieve the goals of the TMDL in an efficient and cost-effective manner, a watershed prioritization approach was developed. The watersheds that best met criteria outlined in the plan by location, load and growth were given higher priority (in alphabetical order) for TMDL implementation projects. At the time the implementation plan was developed those watersheds were: Dixie Slough (AU 001_06), Fifteenmile Creek (AU 007) (including Fivemile (AU 010) and Tenmile (AU 008) Creeks), Indian Creek (AU 002, AU 003) and Mason Creek (AU 006). A BMP projects tracking database was developed to use as a tool to arrive at prioritization decisions. Stormwater dischargers anticipated meeting TMDL targets within 10 years of implementation.

Nonpoint sources in the subbasin are primarily from the agricultural industry sector. Presently, the CWA and Idaho WQS specify that irrigated agriculture pollution control is voluntary and return flows from irrigated agriculture are specifically excluded from the

definition of "point source" in the CWA. However, Idaho has invested in creating several agencies and elected groups to address nonpoint source pollution through industry/activity-specific BMP development. These agencies and organizations developed a component of the TMDL implementation plan to provide guidance and support to members of the agricultural community who choose to voluntarily reduce or prevent pollution from agricultural activities entering subbasin waters. The objectives of the agricultural BMPs are to restore the attainment of beneficial uses of the Lower Boise River through reducing sediment and bacteria pollution from agricultural sources. The implementation plan also includes goals to improve salmonid spawning habitat and educate the agricultural community about water quality and the TMDL process.

Some of the projects that the WAG has initiated since the publication of the TMDL include a Use Attainability Analysis (UAA) of tributaries and drains in the subbasin (2002) (http://www.lowerboisewatershedcouncil.org/05_water-quality/sed-bacteria/subbasin/UAA/LBR_UAA_RevisedTechMemo.pdf) and a Water Quality Trading Project (2000-2003) which can be accessed at the following internet site: (http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/boise_river_lower/boise_river_lower_effluent_status02.pdf).

Several designated agencies are responsible for development and oversight of source-specific TMDL implementation plans. The primary purpose of this report is to review the progress of TMDL implementation and measure progress in attaining beneficial uses and current WQS.

Point Sources

The lower Boise River subbasin uses watershed-based permitting for stormwater NPDES permits. This allows for an integrated approach to a watershed-wide program. Based on the information provided by permitted point sources within the subbasin, permit holders are in compliance with permit conditions. Based on the information provided by the responsible agencies, stormwater and point source compliance monitoring in the Boise urban area is taking place as anticipated by the TMDL implementation plan.

Several agencies and organizations share responsibilities for the Boise area NPDES MS4 permit and information on meetings, responsibilities, budgets and reports is available from the partnership internet site http://www.partnersforcleanwater.org/default.asp. An annual report is published and made available through ACHD's web site at: http://www.achd.ada.id.us/Departments/TechServices/Drainage.aspx. All of the required stormwater annual and five-year reports have been created and NPDES stormwater co-permitees make their reports available through a partnership internet site http://www.partnersforcleanwater.org/Annual%20Report.asp.

Other agencies and stakeholders in the subbasin are in the process of applying for stormwater NPDES permits and have yet to develop or implement the voluntary stormwater activities as described in the plan. A multi-agency effort produced the BMP Handbook of Best Management Practices for Idaho Rural Road Maintenance (University of Idaho, 2005) and highway district personnel were trained in the methods through a training program funded with public funds through various agencies.

Nonpoint Sources

ISDA collected water quality data from 11 tributaries and drains in the subbasin from 1997 through 2003 and published a brief report on each subwatershed. An agricultural BMP implementation plan and a guidance document for evaluating effectiveness were developed in 2003. The TMDL implementation plan for agricultural lands identifies critical acres and prioritizes land for BMPs by identifying acres that have the greatest effect on pollutant delivery to the Boise River as Tier I lands. For sediment pollutant reduction, priority acres are surface-irrigated croplands with the steepest slopes or closest to the Boise River, and riparian acres grazed by livestock. The highest priority watersheds for agricultural BMP implementation to reduce sediment pollution are Dixie Slough (AU 001_06), Fifteenmile Creek (AU 007) (including Fivemile (AU 010) and Tenmile (AU 008) Creeks), and Mason Creek (AU 006).

For bacteria pollutant reduction, critical acres were identified as irrigated pasture, dairy operations, and feedlots. Many livestock operations in Idaho do not meet the EPA definition of an Animal Feedlot Operation (AFO) or Confined Animal Feedlot Operation (CAFO) but contribute sediment and bacteria pollutants to the Lower Boise River. If a facility meets the definition of an AFO or a CAFO, a federal NPDES permit must be obtained and BMPs to limit pollution must be implemented. Dixie (AU 001_06) and Mason Sloughs (AU 006) were identified by the workgroup as priority watersheds for bacteria related to agricultural uses.

Table 21 includes information provided to DEQ by ISDA personnel in response to requests for details regarding TMDL implementation on agricultural lands in the subbasin. A copy of the detailed report is in Appendix D.

The percent of producers implementing and maintaining BMPs is unknown at this time. Annual reports to the WAG have not been developed by ISDA, county soil conservation districts, or Idaho Association of Soil Conservation Districts. For the purposes of providing BMP information for this review, the SCC has reported that 74.1 percent of BMPs implemented have been on Tier III (low priority) agricultural lands and 18.6% of BMPs have been applied to Tier I (high priority) agricultural lands (Appendix D).

Table 21. Implementation activities in progress and planned for the Lower Boise River subbasin as of May 2008.

AU	Year	Target Pollutant	Activity	Completion Status
undetermined	2004	Sediment	Jerry Glen wetland construction	Completed
002_04	2004	Sediment	Indian Creek, Caldwell low impact development demonstration	Completed
011a_06	2004	Sediment, bacteria	Downtown Boise gray water recycling demonstration	Completed
011b_02	2005	Sediment, habitat and flow alteration	Boise River side channel reconstruction	Completed
011a_06	2004	Sediment	Barber Park Living Roof demonstration	Completed
undetermined		Sediment, bacteria	Canyon County Soil Conservation District (SCD), 19 BMPs including a total of 13,666 feet of streambank protected and 35 acres treated	Completed

AU	Year	Target Pollutant	Activity	Completion Status
001		Sediment, bacteria	Canyon SCD, Conway Gulch, 141 BMPs including a total of 99,138 linear feet of streambank protected and 29,462 acres treated	Completed
001		Sediment, bacteria	Canyon SCD, Dixie Slough, 75 BMPs including a total of 41,219 linear feet of streambank protected and 1,352 acres treated	Completed
007		Sediment, bacteria	Ada Soil and Water Conservation District (SWCD), Fifteenmile Creek, 34 BMPs including a total of 14,125 linear feet of streambank protected and 983 acres treated	Completed

In 2004, ISDA planned to provide maintenance and support to 45 water quality projects to support TMDL implementation throughout the state (ISDA, 2004). The ISDA 2003 and 2006 annual report states that the agency plans to "develop BMP effectiveness protocols for agricultural TMDL program" (ISDA, 2003, 2006).

Monitoring

The WAG contracted with the USGS to monitor the Lower Boise River for compliance with the TMDL. The data is available through the USGS National Water Information System (NWIS) which is available through the internet at http://waterdata.usgs.gov/nwis/sw. The ISDA and DEQ also collect data in the subbasin and use the data in specific reports and programs.

Because annual reports have not been created yet, in an effort to review data from all parties and sources, DEQ requested data for this report from the WAG at its March and May meetings. The data included in this report and appendices includes data retrieved by DEQ and data provided from federal, state and local agencies as indicated in Section 3, Table 12, of this report.

The plan specified that monitoring would provide reasonable assurance that pollutant reductions will be achieved. The objectives of the monitoring plan are to determine BMP effectiveness for nonpoint and point sources and to monitor 18 control locations in the subbasin to determine general implementation effectiveness and beneficial use attainment status.

Sediment Monitoring

The implementation plan incorporates nonpoint source LA locations and loads for sediment at 16 locations downstream of the city of Middleton, and WLAs from 9 point sources throughout the subbasin. Two mainstem monitoring locations, USGS Middleton gage (13210500) and USGS Parma gage (13213000), were selected for sediment target (concentration) monitoring locations, as discussed in Section 3. The critical time period for sediment is February 15 through June 14. Table 22 summarizes the information

available from those locations and compares the current available data to the 1995 data and the 37 percent needed reduction specified in the TMDL.

Data in the Reported Load column of Table 22 was calculated using an average of the most recent data collected during the critical time period. If less than 10 values were available from the critical time period, all data collected in the past five years was averaged to determine a load value. Data is not available from all 18 control locations in the subbasin and is included in Appendix C. Discharge and sediment concentrations were averaged in the same manner as previously described and used in the calculation described in *Computation of Fluvial-Sediment Discharge*, (Porterfield, 1972) to determine the values in the Reported Load column.

Of the 11 locations for which there is data, six have sediment load increases between 10 and 394 (estimated) percent and five have sediment load decreases between 25 and 45 percent. A determination of target achievement cannot be made for the seven remaining locations due to an absence of data. The sediment TMDL target reduction of 37 percent has been met or exceeded at Eagle and Thurman Drains, and Fifteenmile and Willow Creeks. However, based on reported data, Fifteenmile Creek (AU 007_04) sediment concentrations indicate a likely exceedance of turbidity criteria for COLD beneficial uses, and therefore can not be determined to support beneficial uses.

Table 22. TMDL locations for tributary, nonpoint, and point source load allocations (LA) and wasteload allocations (WLA) for sediment and reported sediment data compared to TMDL targets.

SSC/TSS LA or WLA Location	AU	TMDL Target Load (tons/day)	Reported Load, (tons/day) (2000, 2005, 2008)	Percent Reduction	Target Achieved (in percent)
Eagle Drain	005_06	1.61	1.11 (2000)	31	100
Thurman Drain	005_06	0.34	0.188 (2008)	45	100
Riparian Load #1 (Bubb)		2.45	No Data	Unknown	Unknown
Fifteenmile Creek	007_04	28.6	16.11 (2005)	44	100
Star Feeder	005_06	2.75	No Data	Unknown	Unknown
Long Feeder	005_06	0.56	No Data	Unknown	Unknown
Watts Creek	005_06	0.45	No Data	Unknown	Unknown
Mill Slough	005_06	7.08	5.33 (2005)	25	67
Willow Creek	015_03	2.28	1.30 (2005)	43	100
Mason Slough	006_02	1.20	1.40 (2005)	16 (increase)	0
Mason Creek	006_02	21.48	74.93 (2005)	248 (increase)	0
E. & W. Hartley Gulch	005_06	5.31	6.27 (2005)	18 (increase)	0
E. & W. Hartley Gulch	005_06	5.31	26.22e (2008)	394e (increase)	0e
Indian Creek	002_04	5.74	7.73 (2005)	181 (increase)	0
Conway Gulch	001_06	7.14	20.04 (2005)	10 (increase)	0
Dixie Drain	001_06	25.91	36.04 (2005)	39 (increase)	0
Riparian Load #2, #3 (Mason-Caitlin)		4.90	No data	Unknown	Unknown
Lander Street	011a_06	1.7	0.04 (5/2008)	Not applicable	100

SSC/TSS LA or WLA Location	AU	TMDL Target Load (tons/day)	Reported Load, (tons/day) (2000, 2005, 2008)	Percent Reduction	Target Achieved (in percent)
West Boise	005_06	3.4	0.03 (5/2008)	Not applicable	100
Meridian	005_06	0.355	0.04 (5/2008)	Not applicable	100
Nampa	005_06	1.5	0.04 (5/2008)	Not applicable	100
Caldwell	001_06	1.0625	0.17 (5/2008)	Not applicable	100
Star	005_06	0.0965	0.011 (5/2008)	Not applicable	100
Middleton	005_06	0.535	0.01 (5/2008)	Not applicable	100
Notus	001_06	0.0165	0.05 (2007)	Not applicable	0
Armour (Swift)	003a_04	0.0625	No Data	Unknown	Unknown

SSC – Suspended Sediment Concentration; TSS – Total Suspended Sediment; AU – Assessment Unit;
e – Estimated value

Bacteria Monitoring

The implementation plan details how compliance with the bacteria TMDL will be determined. The WQS for contact recreation uses at the time the TMDL was developed were based on a surrogate measure using fecal coliform concentrations. The target concentration for each location assigned an LA was 50 cfu/100mL during PCR critical times. The revised WQS (2007), not yet approved by EPA, use a surrogate measure of *E. coli* to determine contact recreation use attainment. The implementation plan explains how the *E. coli* surrogate measure will be applied as the target for TMDL achievement. WQS apply to calculated geomean concentrations from a minimum of five samples in 30 days, triggered by an exceedance of single sample concentration maximum values, with the standard set at 126 cfu/100mL for PCR/SCR. As geomean data is not available for most LA locations, Table 23 uses an average of the *E. coli* single sample concentrations reported for the most recent year (2000, 2005, and 2008) to determine achievement of the TMDL geomean bacteria target goal. Stormwater sources must comply with permit limits that cannot exceed WQS, so those sources did not receive a WLA for bacteria in the TMDL.

Table 23. Bacteria data at TMDL control locations for tributary and nonpoint sources compared to TMDL Addendum (2007) targets (126 geomean cfu/100mL).

SSC / TSS LA or WLA Control Location	AU	1999 geomean Fecal Coliform Concentration (cfu/100mL)	Reported *E. coli* Concentration (cfu/100mL) (2000, 2005, 2008)
Eagle Drain	005_06	604	255 (2000) i
Thurman Drain	005_06	758	48 (2008) i
Fifteenmile Creek	007_04	992	1,238 (2005) i
Mill Slough	005_06	1,282	438 (2005) i
Willow Creek	015_03	803	798 (2005) i
Mason Slough	006_03	3,507	3,768 (2000) i
Mason Creek	006_03	1,407	838 (2000) i
East & West Hartley Gulch	005_06	2,296	767 (2008) i
Indian Creek	002_04	770	193 (2005) i
Conway Gulch	001_06	723	502 (2005) i
Dixie Drain	001_06	2,987	3,130 (2005) i

SSC – Suspended Sediment Concentration; TSS – Total Suspended Sediment; AU – Assessment Unit;
i – instantaneous: single sample

The WAG received grant funds to conduct a bacteria DNA-typing study in the subbasin (2000-2003) to facilitate the development of BMPs to achieve reductions in bacteria loads required to meet TMDL targets. These projects are supported by a variety of funding sources, including DEQ, the Idaho Soil Conservation Commission (SCC), the USGS and EPA. The results of that study were intended to guide future implementation efforts in the subbasin and identified that human and domestic pet sources of bacteria are dominant controllable sources upstream of Glenwood Bridge and that human, domestic pets and livestock sources are dominant controllable sources downstream of the Glenwood Bridge; with the highest prevalence of livestock sources at the Dixie Slough and Parma locations. Controllable sources of bacteria (humans, domestic pets and livestock) throughout the subbasin ranged from 27 to 56 percent.

The critical time period for bacteria is year-round, so data collected throughout the year can be used to determine achievement of WQS and the TMDL. The implementation plan includes a sampling plan that was developed to address data gaps in the TMDL dataset. Stormwater BMPs and permit WLAs for point sources were believed to be sufficient to meet the TMDL for stormwater and point sources. For nonpoint sources bacteria load reduction needed at control monitoring locations varied from 70 to 99 percent. Near the Thurman Drain sampling location land use has been modified from agricultural to urban uses since the TMDL was developed and it is the only nonpoint source control monitoring location observed to have achieved the TMDL target for bacteria. Wildlife and waterfowl have been observed at the sampling location, but as human population densities increase, population density of wildlife usually decreases.

Future Strategy

The status of beneficial use attainment for surface water bodies in the Lower Boise River subbasin is described and summarized in the Executive Summary and Section 3 of this report. Beneficial use attainment was determined by reviewing all of the available pertinent data from the sources identified in Section 3, Table 12. Revising the data collection plan so that data is collected from all control monitoring locations on a regular basis, and creating annual reports as intended in the plan, will facilitate use determination accuracy for future five-year reviews. Based on the data reviewed for this report, bacteria criteria for beneficial uses were exceeded in ten AUs, TMDL sediment targets for beneficial uses were exceeded in nine AUs, and temperature criteria were exceeded in five AUs. Two TMDLs should be scheduled for temperature, two for bacteria, and one for sediment. For the next Integrated Report, nine AUs should be added to Section 3 and seven AUs should be added to Section 5. Thirty AUs should be added to Section 4c for flow/habitat alteration. One AU, 013_03 (Dry Creek) should be added to Section 2 as meeting all presumed uses. DO and pH are within criteria for beneficial uses in all AUs. Sediment LA targets established in the TMDL have been achieved at four of 16 nonpoint source monitoring locations, but three of those four AUs still exceed TMDL sediment targets and/or turbidity criteria, based on results reported at other locations in the AU.

There is a need for BMP effectiveness and ambient water quality monitoring throughout the subbasin, but widespread historic flow and habitat modification may be the most prevalent primary cause of water quality impairment in the subbasin.

Adaptive management appears to be a reasonable strategy for taking steps to encourage voluntary watershed restoration or pollution prevention projects, but not enough data has been collected to determine if that approach will yield significant benefits.

Time Frame

The time frame for all regulated sources in the subbasin to achieve WLAs was met only in the Boise urban area. It is not possible to estimate how long it will take the other area stormwater sources to implement BMPs identified in the plan.

An absence of effectiveness monitoring and annual reporting for nonpoint sources makes it difficult to determine if milestones have been met for this sector.

Due to the nature and scope of flow and habitat modification, restoring water quality to full use attainment may not be possible in all AUs of the subbasin. For example, it is unlikely that aquatic organisms will thrive in a dewatered or unstable stream environment.

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Section 5. Summary of Five Year Review

Review Process

The process to create this report in a manner compliant with Idaho Statute 39-3611 (7) includes a review of existing TMDLs, SBAs, public databases, current and draft integrated reports and other published reports on the lower Boise River subbasin. A call for data was made at the March 13 and May 13 (2008) WAG meetings.

Data and information is reviewed in relationship or comparison to designated, existing, or presumed beneficial uses and applicable WQS. This report compared review data to the TMDL targets, designated or presumed uses and WQS (2007, not yet approved by EPA). In order to determine if the existing use may be different than the designated or presumed use, DEQ searched for fish community data collected in the past 10 years to determine if SS exists in AUs not presently designated for that use. DEQ determined that SS exists in AUs designated for that use, but do not appear to exist in AUs not designated for SS. DEQ also contacted the IDFG to verify the applicable spawning periods for the AUs with SS as a designated use. IDFG confirmed that the SS time periods listed in Table F-1 of the WBAG II (Grafe, et al., 2002) are valid for the lower Boise River subbasin (Jeff Dillon, IDFG, personal communication, January 22, 2009)

Data was determined to be relevant if it met the criteria described in detail in the WBAG II (Grafe, et al, 2002). This review used Tier I and Tier II data to make comparisons to targets and standards and to determine existing uses where data was available.

Changes in Subbasin

There are some changes in the subbasin that are likely to have an effect on water quality. Approximately 50,000 acres of agricultural land (6 percent of land identified as agricultural in the TMDL) was converted to urban/suburban use between 2000 and 2005 (U of I, 2005). At that rate, approximately 1.2 percent of the subbasin area is added to urban/suburban land use each year. Not all of this converted land has been annexed by cities and much of it is managed as small acreages by private landowners. BMP implementation on transitional land through voluntary compliance with federal and state regulations may be more challenging than working with traditional agricultural producers. As cities annex transitional lands, water use for irrigation may decline and result in less water diverted from the mainstem and less sediment and bacteria pollution delivered to the Boise River. This change is not evident in the data reviewed for this report.

Point sources may not have increased in number, but facilities required to operate within the NPDES permit system have increased. Currently, there are 19 municipal and 43 non-municipal permitted wastewater dischargers in Canyon and Ada counties listed on EPA's website (http://oaspub.epa.gov/enviro/ef_home2.water) and four additional facilities are in the process of applying for a permit. This represents a four-fold increase in permitted facilities in the subbasin since the TMDL was developed. Part of this is due to an

increase in the number of point-source facilities and part of this is due to increased regulation of facilities not regulated when the TMDL was developed. The increase in the number of facilities has reduced the reserve for suspended sediment by 0.522 tons/day, to 3.098 tons/day (IDEQ and LBWC, 2008).

TMDL Analysis

The SBA developed with the TMDL applied the WQS for bacteria, sediment, turbidity, nutrients and temperature for comparison with available data, to determine the type and degree of impairment to the lower Boise River. The SBA indicated that some pollutants (DO, Oil & Grease) listed on the 1996 303(d) list were not impairing beneficial uses and those pollutants were delisted in 1998. In reviewing the available pertinent data, that determination is supported.

The SBA also identified that bacteria, sediment and temperature were impairing beneficial uses in the lower Boise River. Bacteria and temperature were documented as exceeding numerical WQS criteria. Sediment was determined to be an impairment using empirical methods to synthesize visual observations and fish community and water column data compared to thresholds identified in appropriate literature. Literature-derived numerical targets were selected for 14 and 60-day intervals to protect the most sensitive beneficial uses (COLD and SS) and available data were compared to those targets. Because tributaries were identified as load sources, LAs were assigned to 11 tributaries and two mainstem river locations for bacteria, and 12 tributaries and three mainstem river locations for sediment.

Bacteria

The targets for bacteria were derived based on the numeric geomean concentration criteria for PCR and SCR (126 *E. coli* cfu/100mL). The needed reductions at LA and control monitoring locations range from 76 to 99 percent. An *E. coli* DNA ribo-typing study (LBRWQP, 2003) determined that 27 to 56 percent of sources are controllable. Using numerical WQS criteria for bacteria targets is supported by research and EPA as a valid method for determining attainment of beneficial uses.

Sediment

Load reductions for sediment were determined based on 1992 (lowest flow year on record) low-flow 90th percentile calculated geomean concentrations at the mainstem river control monitoring locations. A mass-balance analysis was used to determine that a 37 percent reduction was necessary to meet the TMDL targets. A mass-balance approach using low flows during times of year when reported analysis results are the highest to calculate a percent reduction necessary to achieve TMDL targets is a valid approach to establishing targets. Subsequent SBAs for the subbasin tributaries evaluated maximum concentrations of suspended sediment detrimental to fish that may be present for short durations some time of the year. However, those calculated maximum values are likely to exceed turbidity criteria for COLD designated and presumed uses for the tributaries and may not be an acceptable load for those tributaries.

The sediment TMDL Addendum (DEQ, 2007) developed a process for allocating loads to permitted sources from the load that is reserved for growth; however, there is no reserve

for growth that can be allocated to stormwater sources in the TMDL because stormwater was categorized as a nonpoint source pollutant. The TMDL acknowledged the discrepancy between how stormwater was categorized in the Lower Boise River subbasin and other subbasins nationwide, and the EPA recommends that stormwater be categorized as a point source and given a WLA that is then incorporated into the NPDES permit. Given the likely future increases in stormwater from urbanized areas as agricultural lands are converted to suburban and urban land uses, this may be a necessary revision to the sediment TMDL. A phosphorus implementation plan has been developed for the subbasin that addresses the issue of increased WLAs for stormwater as LAs for agricultural sources are decreased, and this may be an appropriate method for revising the sediment TMDL or Addendum.

Using the feedback loop to review data collected at control monitoring locations and at ISDA BMP-effectiveness monitoring locations is a critical part of determining whether or not a uniform proportion of reduction will actually achieve beneficial uses as defined by the dual target concentrations. Using numerical literature-derived targets for sediment is supported by research and EPA as a valid method for determining attainment of beneficial uses.

Temperature

The SBA discusses temperature criteria for SS compared to available data at several locations, including Parma. As Parma was/is not designated for SS, and no data exist to indicate that SS was/is an existing use, this comparison could be misinterpreted as an exceedance of criteria. The SBA also discusses exceedance of SS criteria downstream of Middleton being primarily from natural sources. Data was not collected between Glenwood Bridge and Middleton and only 3 of the 12 identified contributing drains and tributaries were monitored for temperature. Although the SBA explains that mainstem water temperatures closely track air temperatures during the irrigation season, there is no mention of the close correlation between water diversions and drains and increased mainstem water temperatures. Data is insufficient to eliminate drains and tributaries upstream of Middleton from the source inventory.

In view of the fact that approximately 80 percent of mainstem river flow is diverted in the Boise area for surface irrigation of approximately 255,000 acres and then returned to the mainstem at numerous locations between Star and Caldwell (IDWR, 2008; BOR, 2007; ACOE, 1995), any temperature assessment should include all diversions and drains in the pollution source inventory. The conclusion that climate conditions control the water temperatures of the lower Boise River may have overlooked the load contributed by return drains.

The TMDL developed sediment and bacteria LAs for tributaries known to contribute water to the lower Boise River and assigned locations for control monitoring at the mouths of 12 tributaries and drains and 3 locations in the mainstem river to determine TMDL attainment. The SBA and TMDL suggested that additional analysis or considerations be initiated to address temperature impairment issues. Using numerical WQS and numerical literature-derived targets is supported by research and EPA as a valid method for determining attainment of beneficial uses.

Review of Beneficial Uses

Since the SBA and TMDL were developed Idaho has adopted a method of identifying waters by AU instead of stream-reach-specific geographical descriptions of surface water bodies (DEQ, 2002). Using this method, the lower Boise River subbasin includes 36 AUs, 23 of which were listed as impaired in Table 9 of the 2002 Integrated Report and 24 of which are listed as impaired in the draft 2008 Integrated Report (Figure 1, Table 11). The results of the review are presented in Section 3, Table 19 and the accompanying Summary of Recommendations. There is one AU in the lower Boise River subbasin that fully supports beneficial uses.

Water Quality Criteria

In 2001 Idaho WQS were modified to use numeric criteria for *E. coli* as a surrogate measure for recreational beneficial uses instead of fecal coliform numeric criteria. The implementation plan was developed to accommodate this change and uses the appropriate numeric criteria as the target for recreational beneficial uses. In 2004, EPA approved a UAA submitted by DEQ in 2002 to modify the recreational beneficial use of some AUs in the lower Boise subbasin from PCR to SCR (EPA, 2004). In 2007 Idaho WQS were revised to include site-specific beneficial uses and criteria for some AUs in the Lower Boise River subbasin. Those changes are reflected in Section 3; Table 10, Figure 5 and Table 11, and have not yet been approved by EPA.

Future TMDLs

Not all of the water bodies listed as impaired in the draft 2008 Integrated Report will require a TMDL. However, a thorough review of available data was completed before this conclusion was made. This review evaluated appropriateness of WQS to designated uses throughout the subbasin and compared available data to WQS to determine use attainment.

The most common impairment to water quality throughout the Lower Boise River subbasin is a result of human occupation and associated exploitation of resources in the subbasin to support the population, and is not subject to allocations through the TMDL process. Flow and habitat alteration coincident with population expansion is documented in numerous reports to have begun as early as the mid-1800s (MacCoy and Blew, 2005; ISHS, 1993). Temperature and sediment pollution is closely linked to flow and habitat alteration, while nutrient, bacteria, DO, pH and other impairment causes are more closely related to effluent contributions from human sources.

As mentioned in the implementation plan, AUs that do not meet WQS due to influence of a pollutant for which a TMDL should be written will be recommended for listing in Section 5 of the next integrated report, which will lead to TMDL development for pollutants that can be quantified and for which loads can be allocated. For AUs that have data which indicate the AU is inappropriately listed recommendations will be made to correct the listing status.

Watershed Advisory Group Consultation

In compliance with consultation requirements in Idaho Code § 39-3611, DEQ has met regularly with the Lower Boise Watershed Advisory Group (WAG). A WAG for the Lower Boise River TMDL was appointed by the state from an existing non-profit organization (Lower Boise Water Quality Plan, now the Lower Boise Watershed Council).

The group met regularly over the course of the development of the 1999 TMDL and continues to hold regular public meetings in Boise and Caldwell. Minutes from meetings for the previous two years are available on the Council's web site at: http://www.lowerboisewatershedcouncil.org/05_water-quality/environmental-laws.html#wag. In 2008 the WAG met on January 10, February 14, March 13, April 10, May 13, June 12, August 14, September 11 and November 13.

A call for data was made at the March 13 and May 13, 2008, WAG meetings. Data was received from several WAG members and agencies that were contacted by the WAG or referred to DEQ by the WAG. The results of that interaction and consultation are included in the information presented in this report and summarized in Table 24.

Table 24. Summary of recommendations and comments from the Lower Boise Watershed Advisory Group.

Recommended Action	Schedule	Responsibility	Justification
Break out riparian areas in the TMDL and allocate loads by AU	2013	DEQ	To update the pollutant LAs for sediment to reflect the change from stream segments to AUs and facilitate determination of attaining TMDL targets.
Work with Idaho Department of Fish and Game (IDFG) to develop a salmonid spawning (SS) table for the Lower Boise River AUs with designated use for SS to be included in Idaho's Water Body Assessment Guidance (WBAG).	Immediate	DEQ	To better define the time periods that SS temperature criteria would apply in the AUs designated for SS beneficial uses. (Communication with Jeff Dillon of IDFG, January 22, 2009 confirms that common core periods identified in Table F-1 of WBAG II (2001) are applicable to the Lower Boise River.)
Develop a revision to the sediment TMDL/Addendum that re-categorizes stormwater from a nonpoint source to a point source. Recalculate sediment load allocations to stormwater sources and determine WLAs for those point sources.			To enable a revision or creation of a WLA to stormwater sources as land use changes in the subbasin from agricultural to sub urban/urban uses. Categorizing stormwater sources as point sources is supported in EPA guidance for TMDL development.
Add discharge and water temperature data from a 2005 report (developed by the city of Boise) to this review.	Immediate	City of Boise and DEQ	Water temperature data was collected from several drains and tributaries in the subbasin in 2004. Even though that data was not provided in response to the call for data in March and May, it is believed to be a useful data set and should be included in this report. Data provided by Johanna Bell, City of Boise, on January 22,2009 is included in an abridged format in Appendix C.
Add average daily temperature to data tables of temperature data provided by the city of Boise.	Immediate	DEQ	Provides better information to readers. Daily Average data was added to Appendix C.

Recommended Action	Schedule	Responsibility	Justification
Add information about the new Multi Sector General Permit (MSGP) for stormwater.	Immediate	DEQ	The permit information provided in the Pollution Source Review section of the review would be helpful and a link to the permit web page would benefit industries and operators required to comply with the permit.

General Comments and Response

- De-listing AU 003_04 for sediment and listing AU 003_04 for sediment seems counter-productive.
  - DEQ understands that recommendations to de-list and list adjoining AUs for sediment may appear contradictory; however, the recommendations are based on a review of available data and any future TMDL development will consider and evaluate the contribution of sediment loads from unlisted but adjoining AUs. Current data serve to identify specific locations where criteria are exceeded and are not intended to exclude locations or sources not yet identified.
- The use of the word "effluent" in Figure 10 should be clarified that the effluent is not from a Wastewater Treatment Plant (WWTP), but is waste material from multiple sources discharged to the Boise River.
  - The definition in the Glossary has been modified as suggested and the document has been modified to clarify that effluent plumes identified in Figure 10 are not from WWTPs.
- Recognize that the sediment concentration targets in t he TMDL are for the mainstem and that different targets were identified for the tributaries in the 2001 tributary Subbasin Assessments (SBAs).
  - DEQ understands that the sediment targets in the TMDL are to be evaluated in terms of dual concentration targets in the mainstem river and by percent load reduction at identified tributaries. While suspended sediment loads were evaluated in the 2001 SBAs in comparison to published salmonid sensitivity, Idaho WQS (Figure 11) apply to waterbodies designated or presumed to support COLD uses. This review identifies water bodies and AUs for which reported data indicate exceedance of WQS criteria and recommends listing and TMDL development for sediment based on criteria exceedance and/or use support.
- Add some explanation for pollution sources to Fifteenmile Creek for sediment (including Fivemile, Tenmile and Blacks Creeks).
  - DEQ has modified Section 3 of this report to include some discussion of potential sources of sediment impairment to Fifteenmile Creek.
- Make sure that the sediment data from tributaries is compared to the appropriate WQS criteria and targets.
  - DEQ has reviewed the data for suspended sediment, compared the data to the TMDL targets (concentration for mainstem, load reduction for tributaries) and other observations to verify that the recommendations are appropriate at this time.
- Check with IDFG to verify spawning time frames.
  - DEQ has communicated with Jeff Dillon, of the IDFG, to confirm that the general time frame identified in the WBAG II (Grafe et al., 2001) is the time frame that is appropriate for the Lower Boise River given the current body of published research.
- Bacteria reduction goals are difficult to quantify because of the change in surrogate measures from fecal coliform to *E. coli.* How are we evaluating progress on the bacteria TMDL?
  - DEQ agrees that comparing current *E. coli* concentration data with historical fecal coliform concentration data is not a useful measure to determine TMDL progress. Table 23 has been revised to present current bacteria concentration data and provide information regarding the current WQS. The next review will provide a better opportunity to evaluate trends and progress toward bacteria TMDL attainment.
- Because of the relative permanent locations and associated activities, Multi-Sector General Permits (MSGPs) for Industrial Stormwater facilities should be listed. By February 12th, 2009 the MSGP ENOI database will be up and running for Idaho.
  - Annotation of "available for online query in the future" will be added in reference the MSGPs, but as the number of facilities is in constant flux for many industries, the information is available to the public through paperless media, the database won't be functional until after this report is final and the MSGP identifies entities prohibited from contributing pollutants to the system, information for interested parties to compile a list for the subbasin from that source will be included. In general, compiling a list of entities excluded from contributing pollutants to the system is less useful than compiling a list of entities permitted (NPDES) to contribute pollutants to the system.
- Even though the Construction General Permits (CGPs) are transient in nature, an estimated number of permits and associated number of acres could probably be queried and presented for the 5-year period.
  - As the CGP facilities are required to keep all stormwater onsite and/or treat all runoff, this is not a potential source of pollutants to waters of the subbasin.

In response to the general comments offered by the WAG, in consultation with DEQ to create this report, DEQ has taken action on some items, revised the document and contacted other agencies to confirm information in this report. The results of these actions and reviews are included in Table 24.

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GIS Coverages

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Glossary

§303(d)	Refers to section 303 subsection "d" of the Clean Water Act. 303(d) requires states to develop a list of water bodies that do not meet water quality standards. This section also requires total maximum daily loads (TMDLs) be prepared for listed waters. Both the list and the TMDLs are subject to U.S. Environmental Protection Agency approval.
Anthropogenic	Relating to, or resulting from, the influence of human beings on nature.
Aquatic	Occurring, growing, or living in water.
Assemblage (aquatic)	An association of interacting populations of organisms in a given water body; for example, a fish assemblage or a benthic macroinvertebrate assemblage (also see Community) (EPA 1996).
Assessment Database (ADB)	The ADB is a relational database application designed for the U.S. Environmental Protection Agency for tracking water quality assessment data, such as use attainment and causes and sources of impairment. States need to track this information and many other types of assessment data for thousands of water bodies and integrate it into meaningful reports. The ADB is designed to make this process accurate, straightforward, and user-friendly for participating states, territories, tribes, and basin commissions.
Assessment Unit (AU)	A segment of a water body that is treated as a homogenous unit, meaning that any designated uses, the rating of these uses, and any associated causes and sources must be applied to the entirety of the unit.
Beneficial Use	Any of the various uses of water, including, but not limited to, aquatic life, recreation, water supply, wildlife habitat, and aesthetics, which are recognized in water quality standards.
Beneficial Use Reconnaissance Program (BURP)	A program for conducting systematic biological and physical habitat surveys of water bodies in Idaho. BURP protocols address lakes, reservoirs, and wadeable streams and rivers
Benthic	Pertaining to or living on or in the bottom sediments of a water body
Benthic Organic Matter.	The organic matter on the bottom of a water body.
Best Management Practices (BMPs)	Structural, nonstructural, and managerial techniques that are effective and practical means to control nonpoint source pollutants.
	Biomass

Biota	The animal and plant life of a given region.
Biotic	A term applied to the living components of an area.
Clean Water Act (CWA)	The Federal Water Pollution Control Act (commonly known as the Clean Water Act), as last reauthorized by the Water Quality Act of 1987, establishes a process for states to use to develop information on, and control the quality of, the nation's water resources.
Coliform Bacteria	A group of bacteria predominantly inhabiting the intestines of humans and animals but also found in soil. Coliform bacteria are commonly used as indicators of the possible presence of pathogenic organisms (also see Fecal Coliform Bacteria, *E. coli*, and Pathogens).
Community	A group of interacting organisms living together in a given place.
Conductivity	The ability of an aqueous solution to carry electric current, expressed in micro (μ) mhos/centimeter at 25 °C. Conductivity is affected by dissolved solids and is used as an indirect measure of total dissolved solids in a water sample.
Criteria	In the context of water quality, numeric or descriptive factors taken into account in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. The U.S. Environmental Protection Agency develops criteria guidance; states establish criteria.
Cubic Feet per Second	A unit of measure for the rate of flow or discharge of water. One cubic foot per second is the rate of flow of a stream with a cross-section of one square foot flowing at a mean velocity of one foot per second. At a steady rate, once cubic foot per second is equal to 448.8 gallons per minute and 10,984 acre-feet per day.
Decomposition	The breakdown of organic molecules (e.g., sugar) to inorganic molecules (e.g., carbon dioxide and water) through biological and nonbiological processes.
Designated Uses	Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act.
Discharge	The amount of water flowing in the stream channel at the time of measurement. Usually expressed as cubic feet per second (cfs).
Dissolved Oxygen (DO)	The oxygen dissolved in water. Adequate DO is vital to fish and other aquatic life.

Disturbance	Any event or series of events that disrupts ecosystem, community, or population structure and alters the physical environment.
E. coli	Short for *Escherichia coli*, *E. coli* are a group of bacteria that are a subspecies of coliform bacteria. Most *E. coli* are essential to the healthy life of all warm-blooded animals, including humans, but their presence in water is often indicative of fecal contamination. *E. coli* are used by the state of Idaho as the indicator for the presence of pathogenic microorganisms.
Ecology	The scientific study of relationships between organisms and their environment; also defined as the study of the structure and function of nature.
Ecological Indicator	A characteristic of an ecosystem that is related to, or derived from, a measure of a biotic or abiotic variable that can provide quantitative information on ecological structure and function. An indicator can contribute to a measure of integrity and sustainability. Ecological indicators are often used within the multimetric index framework.
Ecological Integrity	The condition of an unimpaired ecosystem as measured by combined chemical, physical (including habitat), and biological attributes (EPA 1996).
Ecosystem	The interacting system of a biological community and its non-living (abiotic) environmental surroundings.
Effluent	A discharge of untreated, partially treated, or treated wastewater into a receiving water body; or a discharge of water mixed with waste material into a stream.
Endangered Species	Animals, birds, fish, plants, or other living organisms threatened with imminent extinction. Requirements for declaring a species as endangered are contained in the Endangered Species Act.
Environment	The complete range of external conditions, physical and biological, that affect a particular organism or community.
Ephemeral Stream	A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long continued supply from melting snow or other sources. Its channel is at all times above the water table (American Geological Institute 1962).
Erosion	The wearing away of areas of the earth's surface by water, wind, ice, and other forces.
Exceedance	A violation (according to DEQ policy) of the pollutant levels permitted by water quality criteria.

Existing Beneficial Use or Existing Use	A beneficial use actually attained in waters on or after November 28, 1975, whether or not the use is designated for the waters in Idaho's *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02).
Exotic Species	A species that is not native (indigenous) to a region.
Extrapolation	Estimation of unknown values by extending or projecting from known values.
Fauna	Animal life, especially the animals characteristic of a region, period, or special environment.
Fecal Coliform Bacteria	Bacteria found in the intestinal tracts of all warm-blooded animals or mammals. Their presence in water is an indicator of pollution and possible contamination by pathogens (also see Coliform Bacteria, *E. coli*, and Pathogens).
Feedback Loop	In the context of watershed management planning, a feedback loop is a process that provides for tracking progress toward goals and revising actions according to that progress.
Flow	See *Discharge*.
Fluvial	In fisheries, this describes fish whose life history takes place entirely in streams but migrate to smaller streams for spawning.
Focal	Critical areas supporting a mosaic of high quality habitats that sustain a diverse or unusually productive complement of native species.
Fully Supporting	In compliance with water quality standards and within the range of biological reference conditions for all designated and exiting beneficial uses as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002).
Fully Supporting Cold Water	Reliable data indicate functioning, sustainable cold water biological assemblages (e.g., fish, macroinvertebrates, or algae), none of which have been modified significantly beyond the natural range of reference conditions.
Fully Supporting but Threatened	An intermediate assessment category describing water bodies that fully support beneficial uses, but have a declining trend in water quality conditions, which if not addressed, will lead to a "not fully supporting" status.
Geographical Information Systems (GIS)	A georeferenced database.

Geometric Mean	A back-transformed mean of the logarithmically transformed numbers often used to describe highly variable, right-skewed data (a few large values), such as bacterial data.
Grab Sample	A single sample collected at a particular time and place. It may represent the composition of the water in that water column.
Gradient	The slope of the land, water, or streambed surface.
Ground Water	Water found beneath the soil surface saturating the layer in which it is located. Most ground water originates as rainfall, is free to move under the influence of gravity, and usually emerges again as stream flow.
Habitat	The living place of an organism or community.
Headwater	The origin or beginning of a stream.
Hydrologic Basin	The area of land drained by a river system, a reach of a river and its tributaries in that reach, a closed basin, or a group of streams forming a drainage area (also see Watershed).
Hydrologic Cycle	The cycling of water from the atmosphere to the earth (precipitation) and back to the atmosphere (evaporation and plant transpiration). Atmospheric moisture, clouds, rainfall, runoff, surface water, ground water, and water infiltrated in soils are all part of the hydrologic cycle.
Hydrologic Unit	One of a nested series of numbered and named watersheds arising from a national standardization of watershed delineation. The initial 1974 effort (USGS 1987) described four levels (region, subregion, accounting unit, and cataloging unit) of watersheds throughout the United States. The fourth level is uniquely identified by an eight-digit code built of two-digit fields for each level in the classification. Originally termed a cataloging unit, fourth field hydrologic units have been more commonly called subbasins. Fifth and sixth field hydrologic units have since been delineated for much of the country and are known as watershed and subwatersheds, respectively.
Hydrologic Unit Code (HUC)	The number assigned to a hydrologic unit. Often used to refer to fourth field hydrologic units.
Hydrology	The science dealing with the properties, distribution, and circulation of water.
Influent	A tributary stream.
Inorganic	Materials not derived from biological sources.

Instantaneous	A condition or measurement at a moment (instant) in time.
Intergravel Dissolved Oxygen	The concentration of dissolved oxygen within spawning gravel. Consideration for determining spawning gravel includes species, water depth, velocity, and substrate.
Intermittent Stream	1) A stream that flows only part of the year, such as when the ground water table is high or when the stream receives water from springs or from surface sources such as melting snow in mountainous areas. The stream ceases to flow above the streambed when losses from evaporation or seepage exceed the available stream flow. 2) A stream that has a period of zero flow for at least one week during most years.
Irrigation Return Flow	Surface (and subsurface) water that leaves a field following the application of irrigation water and eventually flows into streams.
Load Allocation (LA)	A portion of a water body's load capacity for a given pollutant that is given to a particular nonpoint source (by class, type, or geographic area).
Load(ing)	The quantity of a substance entering a receiving stream, usually expressed in pounds or kilograms per day or tons per year. Loading is the product of flow (discharge) and concentration.
Load(ing) Capacity (LC)	A determination of how much pollutant a water body can receive over a given period without causing violations of state water quality standards. Upon allocation to various sources, and a margin of safety, it becomes a total maximum daily load.
Macroinvertebrate	An invertebrate animal (without a backbone) large enough to be seen without magnification and retained by a 500µm mesh (U.S. #30) screen.
Macrophytes	Rooted and floating vascular aquatic plants commonly referred to as water weeds. These plants usually flower and bear seeds. Some forms, such as duckweed and coontail (*Ceratophyllum sp.*), are free-floating forms not rooted in sediment.
Margin of Safety (MOS)	An implicit or explicit portion of a water body's loading capacity set aside to allow the uncertainly about the relationship between the pollutant loads and the quality of the receiving water body. This is a required component of a total maximum daily load (TMDL) and is often incorporated into conservative assumptions used to develop the TMDL (generally within the calculations and/or models). The MOS is not allocated to any sources of pollution.

Mean	Describes the central tendency of a set of numbers. The arithmetic mean (calculated by adding all items in a list, then dividing by the number of items) is the statistic most familiar to most people.
Median	The middle number in a sequence of numbers. If there is an even number of numbers, the median is the average of the two middle numbers. For example, 4 is the median of 1, 2, 4, 14, and 16; 6 is the median of 1, 2, 5, 7, 9, and 11.
Metric	1) A discrete measure of something, such as an ecological indicator (e.g., number of distinct taxon). 2) The metric system of measurement.
Milligrams per Liter (mg/L)	A unit of measure for concentration. In water, it is essentially equivalent to parts per million (ppm).
Million Gallons per Day (MGD)	A unit of measure for the rate of discharge of water often used to measure flow at wastewater treatment plants. One MGD is equal to 1.547 cubic feet per second.
Monitoring	A periodic or continuous measurement of the properties or conditions of some medium of interest, such as monitoring a water body.
Mouth	The location where flowing water enters into a larger water body.
National Pollution Discharge Elimination System (NPDES)	A national program established by the Clean Water Act for permitting point sources of pollution. Discharge of pollution from point sources is not allowed without a permit.
Natural Condition	The condition that exists with little or no anthropogenic influence.
Nitrogen	An element essential to plant growth, and thus is considered a nutrient.
Nonpoint Source	A dispersed source of pollutants, generated from a geographical area when pollutants are dissolved or suspended in runoff and then delivered into waters of the state. Nonpoint sources are without a discernable point or origin. They include, but are not limited to, irrigated and non-irrigated lands used for grazing, crop production, and silviculture; rural roads; construction and mining sites; log storage or rafting; and recreation sites.
Not Assessed (NA)	A concept and an assessment category describing water bodies that have been studied, but are missing critical information needed to complete an assessment.
Not Attainable	A concept and an assessment category describing water bodies that demonstrate characteristics that make it unlikely that a beneficial use

	can be attained (e.g., a stream that is dry but designated for salmonid spawning).
Not Fully Supporting	Not in compliance with water quality standards or not within the range of biological reference conditions for any beneficial use as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002).
Not Fully Supporting Cold Water	At least one biological assemblage has been significantly modified beyond the natural range of its reference condition.
Nuisance	Anything that is injurious to the public health or an obstruction to the free use, in the customary manner, of any waters of the state.
Nutrient	Any substance required by living things to grow. An element or its chemical forms essential to life, such as carbon, oxygen, nitrogen, and phosphorus. Commonly refers to those elements in short supply, such as nitrogen and phosphorus, which usually limit growth.
Orthophosphate	A form of soluble inorganic phosphorus most readily used for algal growth.
Parameter	A variable, measurable property whose value is a determinant of the characteristics of a system, such as temperature, dissolved oxygen, and fish populations are parameters of a stream or lake.
Pathogens	A small subset of microorganisms (e.g., certain bacteria, viruses, and protozoa) that can cause sickness or death. Direct measurement of pathogen levels in surface water is difficult. Consequently, indicator bacteria that are often associated with pathogens are assessed. *E. coli*, a type of fecal coliform bacteria, is used by the state of Idaho as the indicator for the presence of pathogenic microorganisms.
Perennial Stream	A stream that flows year-around in most years.
Periphyton	Attached microflora (algae and diatoms) growing on the bottom of a water body or on submerged substrates, including larger plants.
Pesticide	Substances or mixtures of substances intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture intended for use as a plant regulator, defoliant, or desiccant.
pH	The negative $\log_{10}$ of the concentration of hydrogen ions, a measure which in water ranges from very acid (pH=1) to very alkaline (pH=14). A pH of 7 is neutral. Surface waters usually measure between pH 6 and 9.
Phased TMDL	A total maximum daily load (TMDL) that identifies interim load allocations and details further monitoring to gauge the success of

	management actions in achieving load reduction goals and the effect of actual load reductions on the water quality of a water body. Under a phased TMDL, a refinement of load allocations, wasteload allocations, and the margin of safety is planned at the outset.
Phosphorus	An element essential to plant growth, often in limited supply, and thus considered a nutrient.
Physiochemical	In the context of bioassessment, the term is commonly used to mean the physical and chemical factors of the water column that relate to aquatic biota. Examples in bioassessment usage include saturation of dissolved gases, temperature, pH, conductivity, dissolved or suspended solids, forms of nitrogen, and phosphorus. This term is used interchangeable with the term "physical/chemical."
Point Source	A source of pollutants characterized by having a discrete conveyance, such as a pipe, ditch, or other identifiable "point" of discharge into receiving water. Common point sources of pollution are industrial and municipal wastewater.
Pollutant	Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.
Pollution	A very broad concept that encompasses human-caused changes in the environment which alter the functioning of natural processes and produce undesirable environmental and health effects. This includes human-induced alteration of the physical, biological, chemical, and radiological integrity of water and other media.
Population	A group of interbreeding organisms occupying a particular space; the number of humans or other living creatures in a designated area.
Protocol	A series of formal steps for conducting a test or survey.
Qualitative	Descriptive of kind, type, or direction.
Quality Assurance (QA)	A program organized and designed to provide accurate and precise results. Included are the selection of proper technical methods, tests, or laboratory procedures; sample collection and preservation; the selection of limits; data evaluation; quality control; and personnel qualifications and training (Rand 1995). The goal of QA is to assure the data provided are of the quality needed and claimed (EPA 1996).
Quality Control (QC)	Routine application of specific actions required to provide information for the quality assurance program. Included are standardization, calibration, and replicate samples (Rand 1995). QC is implemented at the field or bench level (EPA 1996).

Quantitative	Descriptive of size, magnitude, or degree.
Reach	A stream section with fairly homogenous physical characteristics.
Reconnaissance	An exploratory or preliminary survey of an area.
Reference	A physical or chemical quantity whose value is known and thus is used to calibrate or standardize instruments.
Reference Condition	1) A condition that fully supports applicable beneficial uses with little affects from human activity and represents the highest level of support attainable. 2) A benchmark for populations of aquatic ecosystems used to describe desired conditions in a biological assessment and acceptable or unacceptable departures from them. The reference condition can be determined through examining regional reference sites, historical conditions, quantitative models, and expert judgment (Hughes 1995).
Riparian	Associated with aquatic (stream, river, lake) habitats. Living or located on the bank of a water body.
River	A large, natural, or human-modified stream that flows in a defined course or channel or in a series of diverging and converging channels.
Runoff	The portion of rainfall, melted snow, or irrigation water that flows across the surface, through shallow underground zones (interflow), and through ground water to creates streams.
Sediments	Deposits of fragmented materials from weathered rocks and organic material that were suspended in, transported by, and eventually deposited by water or air.
Settleable Solids	The volume of material that settles out of one liter of water in one hour.
Species	1) A reproductively isolated aggregate of interbreeding organisms having common attributes and usually designated by a common name. 2) An organism belonging to such a category.
Spring	Ground water seeping out of the earth where the water table intersects the ground surface.
Stenothermal	Unable to tolerate a wide temperature range.
Stratification	A Department of Environmental Quality classification method used to characterize comparable units (also called classes or strata).

Stream	A natural water course containing flowing water, at least part of the year. Together with dissolved and suspended materials, a stream normally supports communities of plants and animals within the channel and the riparian vegetation zone.
Stream Order	Hierarchical ordering of streams based on the degree of branching. A first-order stream is an unforked or unbranched stream. Under Strahler's (1957) system, higher order streams result from the joining of two streams of the same order.
Storm Water Runoff	Rainfall that quickly runs off the land after a storm. In developed watersheds the water flows off roofs and pavement into storm drains that may feed quickly and directly into the stream. The water often carries pollutants picked up from these surfaces.
Stressors	Physical, chemical, or biological entities that can induce adverse effects on ecosystems or human health.
Subbasin	A large watershed of several hundred thousand acres. This is the name commonly given to 4th field hydrologic units (also see Hydrologic Unit).
Subbasin Assessment (SBA)	A watershed-based problem assessment that is the first step in developing a total maximum daily load in Idaho.
Subwatershed	A smaller watershed area delineated within a larger watershed, often for purposes of describing and managing localized conditions. Also proposed for adoption as the formal name for 6th field hydrologic units.
Surface Fines	Sediments of small size deposited on the surface of a streambed or lake bottom. The upper size threshold for fine sediment for fisheries purposes varies from 0.8 to 605 millimeters depending on the observer and methodology used. Results are typically expressed as a percentage of observation points with fine sediment.
Surface Runoff	Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of nonpoint source pollutants in rivers, streams, and lakes. Surface runoff is also called overland flow.
Surface Water	All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors that are directly influenced by surface water.
Suspended Sediments	Fine material (usually sand size or smaller) that remains suspended by turbulence in the water column until deposited in areas of weaker current. These sediments cause turbidity and, when deposited, reduce

	living space within streambed gravels and can cover fish eggs or alevins.
Taxon	Any formal taxonomic unit or category of organisms (e.g., species, genus, family, order). The plural of taxon is taxa (Armantrout 1998).
Threatened Species	Species, determined by the U.S. Fish and Wildlife Service, which are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
Total Maximum Daily Load (TMDL)	A TMDL is a water body's load capacity after it has been allocated among pollutant sources. It can be expressed on a time basis other than daily if appropriate. Sediment loads, for example, are often calculated on an annual basis. A TMDL is equal to the load capacity, such that load capacity = margin of safety + natural background + load allocation + wasteload allocation = TMDL. In common usage, a TMDL also refers to the written document that contains the statement of loads and supporting analyses, often incorporating TMDLs for several water bodies and/or pollutants within a given watershed.
Total Dissolved Solids	Dry weight of all material in solution in a water sample as determined by evaporating and drying filtrate.
Total Suspended Solids (TSS)	The dry weight of material retained on a filter after filtration. Filter pore size and drying temperature can vary. American Public Health Association Standard Methods (Franson et al. 1998) call for using a filter of 2.0 microns or smaller; a 0.45 micron filter is also often used. This method calls for drying at a temperature of 103-105 °C.
Toxic Pollutants	Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.
Tributary	A stream feeding into a larger stream or lake.
Total Dissolved Solids	Dry weight of all material in solution in a water sample as determined by evaporating and drying filtrate.
Total Suspended Solids (TSS)	The dry weight of material retained on a filter after filtration. Filter pore size and drying temperature can vary. American Public Health Association Standard Methods (Franson et al. 1998) call for using a filter of 2.0 micron or smaller; a 0.45 micron filter is also often used. This method calls for drying at a temperature of 103-105 °C.
Tributary	A stream feeding into a larger stream or lake.
Turbidity	A measure of the extent to which light passing through water is scattered by fine suspended materials. The effect of turbidity depends

	on the size of the particles (the finer the particles, the greater the effect per unit weight) and the color of the particles.
Wasteload Allocation (WLA)	The portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. Wasteload allocations specify how much pollutant each point source may release to a water body.
Water Body	A stream, river, lake, estuary, coastline, or other water feature, or portion thereof.
Water Column	Water between the interface with the air at the surface and the interface with the sediment layer at the bottom. The idea derives from a vertical series of measurements (oxygen, temperature, phosphorus) used to characterize water.
Water Pollution	Any alteration of the physical, thermal, chemical, biological, or radioactive properties of any waters of the state, or the discharge of any pollutant into the waters of the state, which will or is likely to create a nuisance or to render such waters harmful, detrimental, or injurious to public health, safety, or welfare; to fish and wildlife; or to domestic, commercial, industrial, recreational, aesthetic, or other beneficial uses.
Water Quality	A term used to describe the biological, chemical, and physical characteristics of water with respect to its suitability for a beneficial use.
Water Quality Criteria	Levels of water quality expected to render a body of water suitable for its designated uses. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, or industrial processes.
Water Quality Management Plan	A state or area-wide waste treatment management plan developed and updated in accordance with the provisions of the Clean Water Act.
Water Quality Modeling	The prediction of the response of some characteristics of lake or stream water based on mathematical relations of input variables such as climate, stream flow, and inflow water quality.
Water Quality Standards	State-adopted and U.S. Environmental Protection Agency-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.
	Water Table
	The upper surface of ground water; below this point, the soil is saturated with water.
Watershed	1) All the land which contributes runoff to a common point in a drainage network, or to a lake outlet. Watersheds are infinitely nested,

	and any large watershed is composed of smaller "subwatersheds." 2) The whole geographic region which contributes water to a point of interest in a water body.
Water Body Identification Number (WBID)	A number that uniquely identifies a water body in Idaho and ties in to the Idaho water quality standards and GIS information.
Wetland	An area that is at least some of the time saturated by surface or ground water so as to support with vegetation adapted to saturated soil conditions. Examples include swamps, bogs, fens, and marshes.

Appendix A. Unit Conversion Chart

Table A-1. Metric - English unit conversions.

	English Units	Metric Units	To Convert	Example
Distance	Miles (mi)	Kilometers (km)	1 mi = 1.61 km	3 mi = 4.83 km
			1 km = 0.62 mi	3 km = 1.86 mi
Length	Inches (in)	Centimeters (cm)	1 in = 2.54 cm	3 in = 7.62 cm
	Feet (ft)	Meters (m)	1 cm = 0.39 in	3 cm = 1.18 in
			1 ft = 0.30 m	3 ft = 0.91 m
			1 m = 3.28 ft	3 m = 9.84 ft
Area	Acres (ac)	Hectares (ha)	1 ac = 0.40 ha	3 ac = 1.20 ha
	Square Feet (ft^2)	Square Meters (m^2)	1 ha = 2.47 ac	3 ha = 7.41 ac
	Square Miles (mi^2)	Square Kilometers (km^2)	1 ft^2 = 0.09 m^2	3 ft^2 = 0.28 m^2
			1 m^2 = 10.76 ft^2	3 m^2 = 32.29 ft^2
			1 mi^2 = 2.59 km^2	3 mi^2 = 7.77 km^2
			1 km^2 = 0.39 mi^2	3 km^2 = 1.16 mi^2
Volume	Gallons (gal)	Liters (L)	1 gal = 3.78 L	3 gal = 11.35 L
	Cubic Feet (ft^3)	Cubic Meters (m^3)	1 L= 0.26 gal	3 L = 0.79 gal
			1 ft^3 = 0.03 m^3	3 ft^3 = 0.09 m^3
			1 m^3 = 35.32 ft^3	3 m^3 = 105.94 ft^3
Flow Rate	Cubic Feet per Second (cfs)[a]	Cubic Meters per Second (m^3/sec)	1 cfs = 0.03 m^3/sec	3 ft^3/sec = 0.09 m^3/sec
			1 m^3/sec = 35.31 cfs	3 m^3/sec = 105.94 ft^3/sec
Concentration	Parts per Million (ppm)	Milligrams per Liter (mg/L)	1 ppm = 1 mg/L[b]	3 ppm = 3 mg/L
Weight	Pounds (lbs)	Kilograms (kg)	1 lb = 0.45 kg	3 lb = 1.36 kg
			1 kg = 2.20 lbs	3 kg = 6.61 lb
Temperature	Fahrenheit (°F)	Celsius (°C)	°C = 0.55 (F - 32)	3 °F = -15.95 °C
			°F = (C x 1.8) + 32	3 °C = 37.4 °F

[a] 1 cfs = 0.65 million gallons per day; 1 million gallons per day is equal to 1.55 cfs.

[b] The ratio of 1 ppm = 1 mg/L is approximate and is only accurate for water.

Appendix B. State and Site-Specific Standards and Criteria

IDAPA 58 TITLE 01 CHAPTER 02

58.01.02 - WATER QUALITY STANDARDS

056.SPECIAL RESOURCE WATERS.

01. Designations. Waters of the state may be designated as special resource waters. Designation as a special resource water recognizes at least one (1) of the following characteristics: (7-1-93)

a. The water is of outstanding high quality, exceeding both criteria for primary contact recreation and cold water aquatic life; (4-5-00)

b. The water is of unique ecological significance; (7-1-93)

c. The water possesses outstanding recreational or aesthetic qualities; (7-1-93)

d. Intensive protection of the quality of the water is in paramount interest of the people of Idaho; (7-1-93)

e. The water is a part of the National Wild and Scenic River System, is within a State or National Park or wildlife refuge and is of prime or major importance to that park or refuge; or (4-5-00)

f. Intensive protection of the quality of the water is necessary to maintain an existing, but jeopardized beneficial use. (4-5-00)

02. Designated Waters. Those waters of the state determined to be special resource waters are listed in Sections 110 through 160. (4-5-00)

03. Restrictions of Point Source Discharges to Special Resource Waters and Their Tributaries. Point source discharges to special resource waters and their tributaries shall be restricted as specified in Subsection 400.01.b.

100.SURFACE WATER USE DESIGNATIONS.

Waterbodies are designated in Idaho to protect water quality for existing or designated uses. The designated use of a waterbody does not imply any rights to access or ability to conduct any activity related to the use designation, nor does it imply that an activity is safe. For example, a designation of primary or secondary contact recreation may occur in areas where it is unsafe to enter the water due to water flows, depth or other hazardous conditions. Another example is that aquatic life uses may be designated in areas that are closed to fishing or access is not allowed by property owners. Wherever attainable, the designated beneficial uses for which the surface waters of the state are to be protected include: (3-15-02)

01. Aquatic Life. (7-1-93)

a. Cold water (COLD): water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species. (4-5-00)

b. Salmonid spawning (SS): waters which provide or could provide a habitat for active self-propagating populations of salmonid fishes. (3-30-07)

c. Seasonal cold water (SC): water quality appropriate for the protection and maintenance of a viable aquatic life community of cool and cold water species, where cold water aquatic life may be absent during, or tolerant of, seasonally warm temperatures. (4-5-00)

d. Warm water (WARM): water quality appropriate for the protection and maintenance of a viable aquatic life community for warm water species. (4-5-00)

e. Modified (MOD): water quality appropriate for an aquatic life community that is limited due to one (1) or more conditions set forth in 40 CFR 131.10(g) which preclude attainment of reference streams or conditions. (4-5-00)

02. Recreation. (7-1-93)

a. Primary contact recreation (PCR): water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving. (4-5-00)

b. Secondary contact recreation (SCR): water quality appropriate for recreational uses on or about the water and which are not included in the primary contact category. These activities may include fishing, boating, wading, infrequent swimming, and other activities where ingestion of raw water is not likely to occur. (4-5-00)

03. Water Supply. (7-1-93)

a. Domestic: water quality appropriate for drinking water supplies. (4-5-00)

b. Agricultural: water quality appropriate for the irrigation of crops or as drinking water for livestock. This use applies to all surface waters of the state. (4-5-00)

c. Industrial: water quality appropriate for industrial water supplies. This use applies to all surface waters of the state.

101.NONDESIGNATED SURFACE WATERS.

01. Undesignated Surface Waters. Surface waters not designated in Sections 110 through 160 shall be designated according to Section 39-3604, Idaho Code, taking into consideration the use of the surface water and such physical, geological, chemical, and biological measures as may affect the surface water. Prior to designation, undesignated waters shall be protected for beneficial uses, which includes all recreational use in and on the water and the protection and propagation of fish, shellfish, and wildlife, wherever attainable. (3-23-98)

a. Because the Department presumes most waters in the state will support cold water aquatic life and primary or secondary contact recreation beneficial uses, the Department will apply cold water aquatic life and primary or secondary contact recreation criteria to undesignated waters unless Sections 101.01.b and 101.01c. are followed. (4-5-00)

b. During the review of any new or existing activity on an undesignated water, the Department may examine all relevant data or may require the gathering of relevant data on beneficial uses; pending determination in Section 101.01.c. existing activities will be allowed to continue. (3-23-98)

c. If, after review and public notice of relevant data, it is determined that beneficial uses in addition to or other than cold water aquatic life and primary or secondary contact recreation are appropriate, then the Department will: (4-5-00) i. Complete the review and compliance determination of the activity in context with the new information on beneficial uses, and (3-23-98) ii. Initiate rulemaking necessary to designate the undesignated water, including providing all necessary data and information to support the proposed designation.

109.HUC INDEX AND ABBREVIATIONS FOR SECTIONS 110, 120, 130, 140, 150, AND 160.

03. Abbreviations. (4-5-00)

a. COLD -- Cold Water Communities. (4-5-00)

b. SS -- Salmonid Spawning. (4-5-00)

c. SC -- Seasonal Cold Water Communities. (4-5-00)

d. WARM -- Warm Water Communities. (4-5-00)

e. MOD -- Modified Communities. (4-5-00)

f. PCR -- Primary Contact Recreation. (4-5-00)

g. SCR -- Secondary Contact Recreation. (4-5-00)

h. DWS -- Domestic Water Supply. (4-5-00)

i. SRW -- Special Resource Water. (4-5-00)

j. NONE -- Use Unattainable. (4-5-00)

k. No entry in the Aquatic Life or Recreation columns -- nondesignated waters for those uses. (3-15-02)

140.SOUTHWEST IDAHO BASIN.
Surface waters found within the Southwest basin total nineteen (19) subbasins and are designated as follows: (4-5-00)

12. LOWER BOISE RIVER SUBBASIN, HUC 17050114 .

Assessment Unit	Waters	Recreation	Aquatic Life	Other
SW-1	Boise River - to mouth Indian Creek	PCR	COLD	
SW-2	Indian Creek - Sugar Ave. (T03N, R02W, Sec. 15) to mouth	SCR	COLD	
SW-3a	Split between New York Canal and historic creek bed to Sugar Ave. (T03N, R02W, Sec. 15) COLD	SCR	SS	
SW-3b	Indian Creek Reservoir to split between New York Canal and historic creek bed MOD	SCR		
SW-3c	Indian Creek Reservoir	PCR	WARM	
SW-3d	Indian Creek - source to Indian Creek Reservoir	SCR	SC	
SW-5	Boise River - river mile 50 (T04N, R02W, Sec. 32) to Indian Creek	PCR	COLD, SS	
SW-6	Mason Creek - New York Canal to mouth	SCR	MOD	
SW-7	Fifteenmile Creek - Miller Canal to mouth	SCR	MOD	
SW-8	Tenmile Creek - Blacks Creek Reservoir Dam to Miller Canal	SCR	MOD	
SW-9	Blacks Creek - source to and including Blacks Creek Reservoir			
SW-10	Fivemile Creek - source to Miller Canal	SCR	MOD	
SW-11a	Boise River - Diversion Dam to river mile 50 (T04N, R02W, Sec. 32)	PCR	COLD, SS	DWS SRW
SW-11b	Boise River - Lucky Peak Dam to Diversion Dam	PCR	COLD	DWS SRW
SW-12	Stewart Gulch, Cottonwood and Crane Creeks - source to mouth			
SW-13	Dry Creek - source to mouth			
SW-14	Big/Little Gulch Creek complex			
SW-15	Willow Creek - source to mouth			
SW-16	Langley/Graveyard Gulch complex			
SW-17	Sand Hollow Creek - source to mouth	SCR	MOD	

200.GENERAL SURFACE WATER QUALITY CRITERIA.
The following general water quality criteria apply to all surface waters of the state, in addition to the water quality criteria set forth for specifically designated waters. (4-5-00)

01. Hazardous Materials. Surface waters of the state shall be free from hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses. These materials do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

02. Toxic Substances. Surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses. These substances do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

03. Deleterious Materials. Surface waters of the state shall be free from deleterious materials in concentrations that impair designated beneficial uses. These materials do not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

04. Radioactive Materials. (7-1-93)

a. Radioactive materials or radioactivity shall not exceed the values listed in the Code of Federal Regulations, Title 10, Chapter 1, Part 20, Appendix B, Table 2, Effluent Concentrations, Column 2. (8-24-94)

b. Radioactive materials or radioactivity shall not exceed concentrations required to meet the standards set forth in Title 10, Chapter 1, Part 20, of the Code of Federal Regulations for maximum exposure of critical human organs in the case of foodstuffs harvested from these waters for human consumption. (7-1-93)

05. Floating, Suspended or Submerged Matter. Surface waters of the state shall be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This matter does not include suspended sediment produced as a result of nonpoint source activities. (8-24-94)

06. Excess Nutrients. Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. (8-24-94)

07. Oxygen-Demanding Materials. Surface waters of the state shall be free from oxygen-demanding materials in concentrations that would result in an anaerobic water condition. (7-1-93)

08. Sediment. Sediment shall not exceed quantities specified in Sections 250 and 252, or, in the absence of specific sediment criteria, quantities which impair designated beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in Section 350. (4-5-00)

09. Natural Background Conditions as Criteria. When natural background conditions exceed any applicable water quality criteria set forth in Sections 210, 250, 251, 252, or 253, the applicable water quality criteria shall not apply; instead, there shall be no lowering of water quality from natural background conditions. Provided, however, that temperature may be increased above natural background conditions when allowed under Section 401. (3-30-07)

250.SURFACE WATER QUALITY CRITERIA FOR AQUATIC LIFE USE DESIGNATIONS.

01. General Criteria. The following criteria apply to all aquatic life use designations. Surface waters are not to vary from the following characteristics due to human activities: (3-15-02)

a. Hydrogen Ion Concentration (pH) values within the range of six point five (6.5) to nine point zero (9.0); (3-30-01)

b. The total concentration of dissolved gas not exceeding one hundred and ten percent (110%) of saturation at atmospheric pressure at the point of sample collection; (7-1-93)

02. Cold Water. Waters designated for cold water aquatic life are not to vary from the following characteristics due to human activities: (3-15-02)

a. Dissolved Oxygen Concentrations exceeding six (6) mg/l at all times. In lakes and reservoirs this standard does not apply to: (7-1-93) i. The bottom twenty percent (20%) of water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (7-1-93) ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (7-1-93) iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (7-1-93)

b. Water temperatures of twenty-two (22) degrees C or less with a maximum daily average of no greater than nineteen (19) degrees C. (8-24-94)

c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)

d. Ammonia. The following criteria are not to be exceeded dependent upon the temperature, T (degrees C), and pH of the water body: (3-15-02)

i. Acute Criterion (Criterion Maximum Concentration (CMC)). The one (1) hour average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equation: (3-15-02)

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

ii. Chronic Criterion (Criterion Continuous Concentration (CCC)). (3-15-02) (1) The thirty (30) day average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equations: (3-15-02)

(a) When fish early life stages are likely present:

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

(b) When fish early life stages are likely absent:

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \bullet 1.45 \cdot 10^{0.028(25-T)})$$

(2) The highest four-day (4) average within the thirty-day (30) period should not exceed two point five (2.5) times the CCC. (3-15-02)
(3) Because the Department presumes that many waters in the state may have both spring-spawning and fall-spawning species of fish present, early life stages of fish may be present throughout much of the year. Accordingly, the Department will apply the CCC for when fish early life stages are present at all times of the year unless: (3-15-02)

(a) Time frames during the year are identified when early life stages are unlikely to be present, and (3-15-02)
(b) The Department is provided all readily available information supporting this finding such as the fish species distributions, spawning periods, nursery periods, and the duration of early life stages found in the water body; and (3-15-02)
(c) The Department determines early life stages are likely absent. (3-15-02)

e. Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days. (8-24-94)

f. Salmonid Spawning. The Department shall determine spawning periods on a waterbody specific basis taking into account knowledge of local fisheries biologists, published literature, records of the Idaho Department of Fish and Game, and other appropriate records of spawning and incubation, as further described in the current version of the "Water Body Assessment Guidance" published by the Idaho Department of Environmental Quality. Waters designated for salmonid spawning, in areas used for spawning and during the time spawning and incubation occurs, are not to vary from the following characteristics due to human activities: (3-30-07)

i. Dissolved Oxygen. (8-24-94) (1) Intergravel Dissolved Oxygen. (8-24-94) (a) One (1) day minimum of not less than five point zero (5.0) mg/l. (8-24-94)

(b) Seven (7) day average mean of not less than six point zero (6.0) mg/l. (8-24-94)

(2) Water-Column Dissolved Oxygen. (8-24-94)

(a) One (1) day minimum of not less than six point zero (6.0) mg/l or ninety percent (90%) of saturation, whichever is greater. (8-24-94)

ii. Water temperatures of thirteen (13) degrees C or less with a maximum daily average no greater than nine (9) degrees C. (8-24-94)

g. Bull Trout Temperature Criteria. Water temperatures for the waters identified under Subsection 250.02.g.i. shall not exceed thirteen degrees Celsius (13C) maximum weekly maximum temperature (MWMT) during June, July and August for juvenile bull trout rearing, and nine degrees Celsius (9C) daily average during September and October for bull trout spawning. For the purposes of measuring these criteria, the values shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24) hour period. The MWMT is the mean of daily maximum water temperatures measured over the annual warmest consecutive seven (7) day period occurring during a given year. (3-30-01)

i The bull trout temperature criteria shall apply to all tributary waters, not including fifth order main stem rivers, located within areas above fourteen hundred (1400) meters elevation south of the Salmon River basin- Clearwater River basin divide, and above six hundred (600) meters elevation north of the Salmon River basin- Clearwater River basin divide, in the fifty-nine (59) Key Watersheds listed in Table 6, Appendix F of Governor Batt's State of Idaho Bull Trout Conservation Plan, 1996, or as designated under Sections 110 through 160 of this rule. (3-23-98)

ii. No thermal discharges will be permitted to the waters described under Subsection 250.02.g.i. unless socially and economically justified as determined by the Department, and then only if the resultant increase in stream temperature is less than five-tenths degrees Celsius (0.5C).

03. Seasonal Cold Water. Between the summer solstice and autumn equinox, waters designated for seasonal cold water aquatic life are not to vary from the following characteristics due to human activities. For the period from autumn equinox to summer solstice the cold water criteria will apply: (3-15-02)

a. Dissolved Oxygen Concentrations exceeding six (6) mg/l at all times. In lakes and reservoirs this standard does not apply to: (4-5-00)

i. The bottom twenty percent (20%) of water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (4-5-00)
ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (4-5-00)
iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (4-5-00)

b. Water temperatures of twenty-six (26) degrees C or less as a daily maximum with a daily average of no greater than twenty-three (23) degrees C. (3-30-01)

c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)
d. Ammonia. Concentration of ammonia are not to exceed the criteria defined at Subsection 250.02.d. (3-15-02)

04. Warm Water. Waters designated for warm water aquatic life are not to vary from the following characteristics due to human activities: (3-30-07)
a. Dissolved oxygen concentrations exceeding five (5) mg/l at all times. In lakes and reservoirs this standard does not apply to: (7-1-93)

i. The bottom twenty percent (20%) of the water depth in natural lakes and reservoirs where depths are thirty-five (35) meters or less. (7-1-93)
ii. The bottom seven (7) meters of water depth in natural lakes and reservoirs where depths are greater than thirty-five (35) meters. (7-1-93)
iii. Those waters of the hypolimnion in stratified lakes and reservoirs. (7-1-93)

b. Water temperatures of thirty-three (33) degrees C or less with a maximum daily average not greater than twenty-nine (29) degrees C. (8-24-94)
c. Temperature in lakes shall have no measurable change from natural background conditions. Reservoirs with mean detention times of greater than fifteen (15) days are considered lakes for this purpose.(3-15-02)
d. Ammonia. The following criteria are to be met dependent upon the temperature, T (degrees C), and pH of the water body: (3-15-02)

i. Acute Criterion (Criterion Maximum Concentration (CMC)). The one (1) hour average concentration of total ammonia nitrogen (in mg N/L) is not to exceed, more than once every three (3) years, the value calculated using the following equation:

$$CMC = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

ii. Chronic Criterion (Criterion Continuous Concentration (CCC)). Concentrations of ammonia are not to exceed the criteria defined at Subsection 250.02.d.ii. (3-15-02)

05. Modified. Water quality criteria for modified aquatic life will be determined on a case-by-case basis reflecting the chemical, physical, and biological levels necessary to attain the existing aquatic life community. These criteria, when determined, will be adopted into these rules. (3-15-02)

251.SURFACE WATER QUALITY CRITERIA FOR RECREATION USE DESIGNATIONS.

01. E. Coli Bacteria. Waters designated for recreation are not to contain E. coli bacteria, used as indicators of human pathogens, in concentrations exceeding: (4-11-06)
a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain E. coli bacteria in concentrations exceeding a geometric mean of one hundred twenty-six (126) E. coli organisms per one hundred (100) ml based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period. (4-11-06)
b. Use of Single Sample Values. A water sample exceeding the E. coli single sample maximums below indicates likely exceedance of the geometric mean criterion, but is not alone a violation of water quality standards. If a single sample exceeds the maximums set forth in Subsections 251.01.b.i., 251.01.b.ii., and 251.01.b.iii., then additional samples must be taken as specified in Subsection 251.01.c.: (4-11-06)

i. For waters designated as secondary contact recreation, a single sample maximum of five hundred seventy-six (576) E. coli organisms per one hundred (100) ml; or (4-11-06)
ii. For waters designated as primary contact recreation, a single sample maximum of four hundred six (406) E. coli organisms per one hundred (100) ml; or (4-11-06)

iii. For areas within waters designated for primary contact recreation that are additionally specified as public swimming beaches, a single sample maximum of two hundred thirty-five (235) E. coli organisms per one hundred (100) ml. Single sample counts above this value should be used in considering beach closures. (4-11-06)

c. Additional Sampling. When a single sample maximum, as set forth in Subsections 251.01.b.i., 251.01.b.ii., and 251.01.b.iii., is exceeded, additional samples should be taken to assess compliance with the geometric mean E. coli criteria in Subsection 251.01.a. Sufficient additional samples should be taken by the Department to calculate a geometric mean in accordance with Subsection 251.01.a. This provision does not require additional ambient monitoring responsibilities for dischargers. (4-11-06)

252.SURFACE WATER QUALITY CRITERIA FOR WATER SUPPLY USE DESIGNATION.

01. Domestic. Waters designated for domestic water supplies are to exhibit the following characteristics: (4-5-00)

a. Radioactive materials or radioactivity not to exceed concentrations specified in Idaho Department of Environmental Quality Rules, IDAPA 58.01.08, "Rules Governing Public Drinking Water Systems." (8-24-94)

b. Small public water supplies (Surface Water). (8-24-94)

i. The following Table identifies waters, including their watersheds above the public water supply intake (except where noted), which are designated as small public water supplies.

278. SUBSECTION 150.12.

01. Boise River, SW-1 and SW-5 -- Salmonid Spawning and Dissolved Oxygen.

The waters of the Boise River from Veterans State Park to its mouth will have dissolved oxygen concentrations of six (6) mg/l or seventy-five percent (75%) of saturation, whichever is greater, during the spawning period of salmonid fishes inhabiting those waters. (3-15-02)

02. Indian Creek, SW-3b, Mason Creek, SW-6, and Sand Hollow Creek, SW-17 -- Modified Aquatic Life Use. All numeric criteria applicable to the seasonal cold water aquatic life use apply with the exception of dissolved oxygen. Dissolved oxygen concentrations are to exceed four (4) mg/l at all times. (3-15-02)

03. Fifteenmile Creek, SW-7; Tenmile Creek, SW-8, and Five Mile Creek, SW-10 – Modified Aquatic Life Use. All numeric criteria applicable to the seasonal cold water aquatic life use apply. (3-15-02)

04. Boise River, SW-5 and SW-11a -- Copper and Lead Aquatic Life Criteria. The water-effect ratio (WER) values used in the equations in Subsection 210.02 for calculating copper and lead CMC and CCC values shall be two and five hundred seventy-eight thousandths (2.578) for dissolved copper and two and forty-nine thousandths (2.049) for lead. These site-specific criteria shall apply to the Boise River from the Lander St. wastewater outfall to where the channels of the Boise River become fully mixed downstream of Eagle Island.(5-3-03)

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Appendix C. Data Tables and Graphs

Table C-1. USGS data from Lower Boise River subbasin locations between 2003 and 2008.

USGS Reported Data, Lower Boise River Locations, 2003-2007															
Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
Boise River below Diversion 13203510															
13203510	2/18/2003	12:35	3.5	7	242	93	12.6	105	7.5	0.039	0.02	0.019	0.9	2	1.3
13203510	4/15/2003	12:28	6.1	5.5	1200	92	13.1	117	7.9	0.039	0.03	0.019	0.9	10	32
13203510	5/13/2003	10:48	7.7	12	1570	81	11.7	108	7.8	0.039	0.039	0.019	0.9	3	13
13203510	6/17/2003	10:30	11.1	25	2110	69	11.8	119	7.6	0.039	0.039	0.019	4	3	17
13203510	7/15/2003	10:32	13.3	25	2030	51	10.3	109	7.4	0.039	0.039	0.019	1	4	22
13203510	8/12/2003	10:34	17	21.5	1960	67	10	115	7.5	0.039	0.039	0.019	1	2	11
13203510	9/16/2003	10:02	17.2	16	1360	81	9.3	109	7.4	0.039	0.02	0.01	2	10	37
13203510	10/21/2003	11:27	12.5	20	290	92	11.6	119	7.7	0.039	0.06	0.01	1	45	35
13203510	12/16/2003	10:39	4.6	1.5	240	92	13.3	113	8	0.039	0.03	0.01	0.9	6	3.9
13203510	2/18/2004	10:32	1.8	11.5	367	97	13	104	7.6	0.039	0.03	0.01	0.9	2	2
13203510	4/14/2004	12:23	5.7	15	1440	96	13.6	121	7.6	0.039	0.03	0.01	0.9	10	39
13203510	5/12/2004	11:11	8.4	12	1810	76	12.5	119	7.5	0.039	0.02	0.01	0.9	4	20
13203510	6/15/2004	10:10	10.8	12	1750	67	10.7	106	7.3	0.039	0.039	0.019	1	2	9.5
13203510	7/20/2004	11:48	13.7	28	2050	70	9.1	97	7.2	0.039	0.039	0.019	1	3	17
13203510	8/24/2004	10:18	16.6	17	1530	70	7.5	86	7	0.03	0.039	0.019	4	3	12
13203510	9/21/2004	10:53	16.9	8	1300	78	8.2	93	7.3	0.039	0.02	0.019	1	4	14
13203510	11/7/2005	9:45	10.6	9.5	252	90	10.9	110	7.8	0.039	0.02		1	3	2
13203510	12/20/2005	14:30	2.4		250	89	14.2	114	7.5		0.03		2	3	2
13203510	2/14/2006	12:45	2		4000	91	13.7	110	7.1		0.02		0.9	3	32
13203510	4/18/2006	9:00	5.8		6580	73	17	148			0.06		6	18	320
13203510	5/16/2006	8:15	9		8140	66	12.9	124			0.01		0.9	4	88
13203510	6/13/2006	8:15	9.5		5770	54	12.5	122			0.02		0.9	7	109

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13203510	7/11/2006	7:40	11.5		2130	51	11.7	120			0.01		1	3	17
13203510	8/22/2006	10:05	15.2		2120	59	9.4	104			0.01		0.9	3	17
13203510	9/12/2006	14:30	16.6		1480	60	7	80			0.01		0.9	2	8
13203510	10/18/2006	9:30	12.6		364	66	8.5	88			0.01		1		
13203510	12/20/2006	11:00	2.9		250	79	14.3	116			0.02		0.9		
13203510	2/21/2007	9:40	1.5		255	83	14.3	113			0.019		0.9		
13203510	4/11/2007	10:20	5.1		1260	81	10.6	92	7.7		0.02		1	9	35
13203510	5/16/2007	9:00	7.6		1820	81	10.4	97	6.8		0.019		0.9	2	9.8
13203510	6/20/2007	7:50	11.3		2180	66	9.7	98	6.5		0.01		1	4	24
13203510	6/26/2007	10:00								0.019		0.007			
13203510	7/18/2007	7:50	13.7		4360	72	9.3	101			0.019		1	2	24
13203510	8/8/2007	9:50	15.4		1930	70	8.9	98	6		0.01		1	2	10
13203510	9/19/2007	10:00	16.4		740	78	7.9	90	7.1		0.02		0.9	1	2
13203510	11/19/2007	12:45	8.7		245	88	11.6	111	7.2		0.02		0.9		
13203510	1/8/2008	9:40	1.8		250	85	11.9	95	7		0.02		0.9		
13203510	3/18/2008	8:45	3		252	93	12.8	91	7.2		0.019		0.9		
Sewer outflow at Boise 13205643															
13205643	6/27/2007	17:00								0.394		5.26			
Boise River at Glenwood Bridge 13206000															
13206000	2/18/2003	16:00	6.6	9.5	298	152	13.4	120	8.4	0.039	0.31	0.24	12	5	4
13206000	4/15/2003	16:36	10.2	15	818	114	13.4	132	8.9	0.07	0.08	0.05	19	11	24
13206000	5/13/2003	14:33	11.2	19.5	882	102	13.5	134	9.1	0.039	0.12	0.1	6	3	7.1
13206000	6/17/2003	14:25	14.6	32	1270	85	13.1	143	9	0.039	0.08	0.07	25	6	21
13206000	7/15/2003	14:32	16.6	34	1290	68	10.9	123	8.6	0.039	0.12	0.1	11	5	17
13206000	8/12/2003	14:15	19	29	1300	85	11.6	137	8.8	0.039	0.11	0.09	18	3	11
13206000	9/16/2003	14:00	17.9	19	700	110	10.3	121	8.2	0.039	0.17	0.15	19	8	15

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13206000	10/21/2003	14:34	15.1	24	315	159	12.2	132	8.4	0.039	0.25	0.22	48	12	10
13206000	12/16/2003	14:07	5.2	7	263	169	14.3	123	8.2	0.039	0.31	0.22	22	5	3.6
13206000	2/18/2004	14:26	5.7	9.5	385	166	13	114	7.9	0.039	0.35	0.26	44	10	10
13206000	4/14/2004	15:46	8.5	16	908	120	14.6	138	8.8	0.03	0.15	0.1	24	10	25
13206000	5/12/2004	15:08	10.9	15	908	100	13.6	136	8.8	0.039	0.18	0.15	11	7	17
13206000	6/15/2004	14:34	14.3	23	895	91	12.6	135	8.7	0.039	0.17	0.15	25	5	12
13206000	7/20/2004	15:27	17.5	31	1220	87	10.4	119	8.2	0.039	0.11	0.09	130	6	20
13206000	8/24/2004	14:28	17.6	21	769	96	10.6	123	8.4	0.09	0.18	0.16	34	4	8.3
13206000	9/21/2004	14:49	17.2	16.5	615	108	10.4	118	8.4	0.04	0.24	0.2	36	5	8.3
13206000	11/7/2005	12:25	10.7	10.5	282	145	11	111	7.9		0.43		77	3	2.3
13206000	12/20/2005	12:50	3.2		258	165	14.2	115	7		0.52		52	3	2.1
13206000	2/14/2006	10:15	1.7		4070	97	13.4	105	6.8		0.05		10	18	198
13206000	4/18/2006	11:35	6.3	10	5800	79	14.3	125			0.09		20	35	548
13206000	5/16/2006	10:30	9.4		6900	70	11.6	111			0.04		11	18	335
13206000	6/13/2006	10:35	10.2		4330	59	11.7	115			0.05		58	20	234
13206000	7/11/2006	9:40	12.3		1300	65	10.8	112			0.12		42	4	14
13206000	8/22/2006	8:10	14.8		1210	70	9.7	106			0.07		57	3	9.8
13206000	9/13/2006	15:15	18		652	91	11.5	135			0.24		490	3	5.3
13206000	10/17/2006	12:30	12.2		344	125	10.2	105			0.63		130	4	3.7
13206000	12/19/2006	13:30	1.8		261	158	14	109			0.64		26	4	2.8
13206000	2/20/2007	13:00	4.3		269	151	16	137			0.47		19	4	2.9
13206000	4/10/2007	13:10	6.7		940	109	13.1	117	8.1		0.17		14	4	10
13206000	5/15/2007	12:40	9.9		947	96	13.4	130	8.1		0.12		20	3	7.7
13206000	6/19/2007	12:30	13		1240	87	11.2	117	7.3		0.11		18	5	17
13206000	6/26/2007	11:45								0.019		0.076			
13206000	7/17/2007	12:00	15.6		1400	83	10.2	114	7.2		0.11		30	5	19
13206000	8/7/2007	12:50	16.8		1060	85	10.7	122	7.7		0.09		45	5	14
13206000	9/18/2007	13:00	15.5		545	106	9.5	104	7		0.24		S 43	2	2.9

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13206000	10/23/2007	12:00													
13206000	11/20/2007	12:20	8		271	148	11.5	106	7.1		0.44		120		
13206000	1/8/2008	11:20	2.1		242	143	12.7	102	7.1		0.39		43		
13206000	3/18/2008	10:20	6.2		270	135	11.9	105	7.2		0.04		23		
Sewer outflow near Eagle 13206303															
13206303	6/27/2007	17:30								0.212		6.12			
Boise River at Star Bridge 13210007															
13210007	2/15/2006	10:15	1.7		4050	105	13.1	103	6.8		0.07		11	15	164
13210007	4/18/2006	13:30	7.1	11	5830	87	13.8	123			0.12		23	35	551
13210007	5/16/2006	12:20	10.6		6960	76	11.8	116			0.04		56	14	263
13210007	6/13/2006	12:20	11.7		4450	68	10.9	111			0.07		88	18	216
Fivemile Creek 13210795															
13210795	5/2/2005	9:00	10.8	14	31	199	7.8	77	7.8	0.12	0.47	0.33	490	129	11
13210795	6/6/2005	8:32	12.3	11.5	73	186			7.7	0.04	0.26	0.17	690	53	10
13210795	7/5/2005	8:50	15.8	19	603	241	9	99	7.4	0.33	0.56	0.39	2900	71	116
13210795	8/8/2005	8:00	17.8	20.5	50	264	6.1	70	7.3	0.04	0.39	0.28	360	72	9.7
Tenmile Creek 13210660															
13210660	5/2/2005	10:15	9.9	14	56	181	7.6	73	7.7	0.07	0.22	0.15	280	65	9.9
13210660	6/6/2005	10:10	12.2	11.5	70	202			7.8	0.02	0.16	0.1	490	66	13
13210660	7/5/2005	10:40	15.1	19	75	218	8.7	95	7.6	0.06	0.33	0.15	680	164	33
13210660	8/8/2005	9:30	17.5	20.5	70	276	7.1	81	7.5	0.02	0.35	0.17	990	162	31

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
Fifteenmile Creek 13210815															
13210815	5/2/2005	12:55	14.1	21	61	259	7.7	82	7.8	0.06	0.39	0.28	1900	69	11
13210815	6/6/2005	11:45	13.8	15	102	228			7.9	0.04	0.23	0.16	650	54	15
13210815	7/5/2005	12:10	17.3	28.5	85	254	8.7	99	7.7	0.08	0.38	0.24	1200	72	17
13210815	8/8/2005	11:00	17.8	30	79	280	7.7	89	7.7	0.02	0.37	0.23	1200	97	21
Boise River above Middleton 13210050															
13210050	2/19/2003	12:35	6	5.5	364	229	15.7	138	8.5	0.039	0.49	0.4	7	9	8.8
13210050	4/16/2003	11:30	10.3	11.5	634	153	13.1	127	8.5	0.039	0.19	0.14	33	13	22
13210050	5/14/2003	11:05	13.2	16	395	152	13.5	140	8.7	0.039	0.18	0.14	200	4	4.3
13210050	6/18/2003	10:50	16.3	26	487	128	10.8	121	8.1	0.039	0.16	0.12	99	10	13
13210050	7/16/2003	10:36	17.9	25.5	578	107	9.7	112	7.6	0.039	0.17	0.12	54	5	7.8
13210050	8/13/2003	10:40	18.9	23	664	125	8.8	103	7.5	0.039	0.16	0.12	60	5	9
13210050	9/17/2003	15:28	17.2	18	361	165	12	135	8.6	0.039	0.2	0.16	34	8	7.8
13210050	10/22/2003	14:32	15	20	288	221	12.6	136	8.5	0.039	0.38	0.33	20	5	3.9
13210050	12/17/2003	14:23	5.8	8	302	247	14.6	126	8.6	0.039	0.57	0.47	7	5	4.1
13210050	2/19/2004	11:00	5.4	6	544	221	12.7	109	7.6	0.09	0.5	0.37	71	29	43
13210050	4/13/2004	14:48	12.6	23	363	162	15.3	158	8.8	0.039	0.22	0.16	83	11	11
13210050	5/11/2004	16:00	13	16	265	158	13.2	138	8.4	0.039	0.2	0.16	260	7	5
13210050	6/16/2004	14:02	17.3	22	292	139	13.3	150	8.8	0.039	0.18	0.16	80	5	3.9
13210050	7/21/2004	14:27	19.9	31.5	565	125	11.2	134	8	0.039	0.16	0.12	72	6	9.2
13210050	8/25/2004	15:10	19.1	24	377	144	10.7	127	8.1	0.039	0.19	0.15	78	5	5.1
13210050	9/22/2004	15:36	16.9	17.5	361	165	11.8	133	8.4	0.039	0.27	0.22	36	4	3.9
13210050	11/8/2005	13:12	9.8	11	291	235	12.2	117	8.2		0.59		16	4	3.1
13210050	12/20/2005	11:20	2.6		277	232	13.3	105	7.2		0.68		23	6	4.5
13210050	7/11/2006	11:40	17.4		536	108	9.9	114			0.19		100	8	12
13210050	8/21/2006	10:40	17.1		680	118	8.8	100			0.22		56	8	15
13210050	9/13/2006	12:35	15.5		310	381	9.3	102			0.38		43	5	4.2

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13210050	10/17/2006	11:00	10.8		348	204	9.9	98			0.62		27		
13210050	12/19/2006	12:00	0.8		325	240	14.1	106			0.71		33		
13210050	2/20/2007	11:30	7.8		350	253	12.7	117			0.69		41		
13210050	4/10/2007	11:00	8		560	151	11.1	102	7.7		0.29		66	8	12
13210050	5/15/2007	10:50	13.4		280	161	11.4	119	7.6		0.22		130	9	6.8
13210050	6/19/2007	10:40	15.3		886	127	9.2	100	6.8		0.21		100	14	33
13210050	7/17/2007	10:15	18		700	119	8.3	97	6.8		0.18		100	9	17
13210050	8/7/2007	11:00	18.3		450	132	9.1	106	6.9		0.21		50	7	8.5
13210050	9/18/2007	11:30	15.6		291	165	9	99	7.5		0.35		S 41	3	2.4
13210050	11/20/2007	10:50	8		296	220	10	91	7.1		0.51		20		
13210050	1/8/2008	12:50	2.6		295	247	13.4	108	7.8		0.58		12		
13210050	3/18/2008	11:55	8.2		342	235	12.2	112	8.1		0.06		150		
Mill Slough 132108247															
132108247	5/4/2005	12:00	13.3	18	80	310	8	83	7.6	0.04	0.26	0.18	840	35	7.6
132108247	6/8/2005	12:00	14	16.5	121	209			7.7	0.039	0.18	0.13	390	15	4.9
132108247	7/7/2005	11:05	18.1	28	92	269	8.1	94	7.4	0.039	0.22	0.17	240	15	3.7
132108247	8/10/2005	11:30	18.4	30.5	117	255	7.6	88	7.6	0.039	0.23	0.18	280	12	3.8
Willow Creek 13210835															
13210835	5/4/2005	10:15	13.4	13.5	21	148	7.2	75	7.8	0.039	0.17	0.13	1000	16	0.91
13210835	6/8/2005	10:00		17.5	29	139			7.6	0.06	0.16	0.1	770	22	1.7
13210835	7/7/2005	9:10	19.3	23.5	30	149	7.2	85	7.5	0.039	0.17	0.1	920	24	1.9
13210835	8/10/2005	9:25	20.2	26	24	122	8.3	101	7.6	0.039	0.12	0.08	500	12	0.78
Mason Creek 13210985															
13210985	5/4/2005	8:05	12.8	12.5	84	385	6.6	68	7.8	0.47	0.69	0.45	1400	227	52
13210985	6/8/2005	8:00	12	11.5	148	361			7.8	0.03	0.32	0.21	840	140	56

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13210985	7/7/2005	7:15	17.3	19	127	401	7.3	83	7.6	0.21	0.65	0.32	770	330	113
13210985	8/10/2005	7:40	18.3	18	123	404	7.2	84	7.5	0.02	0.51	0.25	340	235	78
Indian Creek 13211445															
13211445	5/3/2005	12:05	14.8	19.5	23	404			8.1	0.09	0.63	0.55	630	51	3.1
13211445	6/7/2005	11:35	13.8	16	72	411			8	0.02	0.45	0.39	310	52	10
13211445	7/6/2005	11:25	18.2	29	71	376	7.6	88	7.8	0.06	0.5	0.39	520	70	13
13211445	8/9/2005	11:45	19.6	34	79	350	8.2	98	7.9	0.03	0.51	0.41	550	68	15
13211445	6/27/2007	12:30	17.3	26		363	8.9	102	8.2	0.016		0.467			
Conway Gulch 13212550															
13212550	5/3/2005	10:10	13.7	17	25	577			8.2	0.039	0.26	0.1	230	125	8.5
13212550	6/7/2005	10:00	13.1	13.5	39	461			8	0.039	0.25	0.09	480	165	17
13212550	7/6/2005	9:50	17.2	27	29	514	7.8	89	8	0.04	0.95	0.11	690	739	58
13212550	8/9/2005	10:05	17.8	29.5	34	551	7.9	91	8	0.03	0.69	0.12	610	496	46
Dixie Slough 13212890															
13212890	5/3/2005	8:00	13.5	13.5	171	431			7.7	0.05	0.52	0.36	7700	108	50
13212890	6/7/2005	8:05	13.6	11.5	223	423			7.8	0.0396	0.37	0.3	1300	55	33
13212890	7/6/2005	7:55	18.9	21	190	420	7.1	83	7.3	0.03	0.39	0.29	2900	58	30
13212890	8/9/2005	8:10	19.7	24	199	412	6.2	74	7.4	0.04	0.46	0.34	620	50	27
Boise River near Parma 13213000															
13213000	2/19/2003	16:10	7.5	10.5	795	473	13.3	121	8.3	0.039	0.44	0.35	31	22	47
13213000	4/16/2003	14:45	13.4	16	910	278	10.9	113	8.2	0.039	0.31	0.17	280	63	155
13213000	5/14/2003	14:42	17.3	22.5	961	315	11.1	125	8.3	0.039	0.25	0.19	290	36	93
13213000	6/18/2003	14:10	21.7	31.5	778	344	8.7	109	8.1	0.039	0.29	0.23	24	28	59
13213000	7/16/2003	14:09	23.3	32.5	722	336	9.7	123	8.2	0.039	0.31	0.23	9	30	58

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13213000	8/13/2003	14:12	21.9	29	772	342	10	123	8.2	0.039	0.3	0.21	16	33	69
13213000	9/17/2003	11:00	14.6	13	910	395	9.5	101	8	0.039	0.28	0.22	140	22	54
13213000	10/22/2003	11:07	13.4	11	885	501	9.9	103	8.1	0.039	0.31	0.27	50	20	48
13213000	12/17/2003	11:00	5.9	3	812	518	11.9	103	8.2	0.039	0.5	0.41	79	14	31
13213000	2/19/2004	14:23	8.2	10	1190	442	12.1	111	8.1	0.07	0.48	0.29	93	85	273
13213000	4/13/2004	11:20	13.3	17	588	360	10	104	7.8	0.09	0.38	0.26	980	61	97
13213000	5/11/2004	11:28	12.2	15	891	369	9.6	98	7.9	0.04	0.41	0.26	1300	84	202
13213000	6/16/2004	10:28	16.1	17	560	399	9.2	101	7.9	0.039	0.29	0.23	200	29	44
13213000	7/21/2004	10:44	21.4	25	891	346	6.8	84	7.4	0.03	0.4	0.26	64	77	185
13213000	8/25/2004	11:05	18	21	848	374	7.7	89	7.6	0.039	0.3	0.22	78	46	105
13213000	9/22/2004	11:14	13.7	12.5	968	375	9.4	98	7.8	0.039	0.28	0.22	120	26	68
13213000	10/19/2004	11:54	11.5	11.5	795	452	11.9	120	7.9	0.039	0.33	0.28	68	10	21
13213000	12/14/2004	11:10	7.8	6.5	801	498	10.8	98	8	0.039	0.42	0.41	76	12	26
13213000	2/15/2005	12:08	5.6	1	755		13.6		8.2	0.039	0.47	0.4	61	21	43
13213000	4/6/2005	11:40	10.8	14.5	432	468	11.5	112	8.1	0.039	0.45	0.38	240	21	24
13213000	5/2/2005	13:00	15.9	18	376	434	10.3	112	7.7		0.41		520		
13213000	5/16/2005	13:30	14.3	12	1360	297	8.3	90	7.5	0.03	0.35	0.21	580	119	437
13213000	5/31/2005	12:42	18.5	22	555	371	9.3	107	7.7		0.36		190	53	79
13213000	6/13/2005	11:43	16.3	20.5	579	390	9.8	108	7.9	0.039	0.36	0.27	99	43	67
13213000	7/18/2005	12:30	20.7	29.5	628	351	8.7	106	7.8	0.03	0.42	0.32	100	65	110
13213000	7/31/2005	10:48	21.9	28	505	383	7.6	94	8		0.37		51	39	53
13213000	8/15/2005	11:37	19	23		330	8.7	102	7.9		0.36		130	72	
13213000	8/29/2005	9:30	18.9	23.5	830	335	7.5	89	7.8		0.32		100	56	125
13213000	9/12/2005	13:30	5.9	17	801	376	11.6	100	8.3	0.039	0.28	0.23	54	26	56
13213000	11/8/2005	10:16	9.5	7	848	489	10.6	100	8.1		0.4		70	14	32
13213000	12/20/2005	9:00	3.2		744	482	12.5	100	7.5		0.46		140	56	112
13213000	2/15/2006	12:45	2.7		4430	187	12.5	100	7.2		0.14		44	24	287
13213000	4/19/2006	11:30	7.8		6610	126	10.6	96			0.17		82	53	946

Site ID	Date	Time	WT (*C)	AT (*C)	Q (cfs)	SpC (uS/cm3)	DO (mg/L)	DO (% sat.)	pH	AmmDis. (N mg/L)	TP (mg/L)	OPDis. (mg/L)	*E. coli* (cfu/100mL)	SSC (mg/L)	SSQ (tons/day)
13213000	5/17/2006	11:00	13.2		7080	119	12	124			0.12		330	36	688
13213000	6/14/2006	9:10	13		4940	135	10.9	112			0.19		610	243	3240
13213000	7/12/2006	7:45	20.1		1020	308	7.8	94			0.34		300	80	220
13213000	8/21/2006	8:30	17.8		1100	311	8.3	95			0.27		230	46	137
13213000	9/13/2006	9:30	19		873	381	9.3	109			0.31		130	22	52
13213000	10/17/2006	9:10	10.1		848	455	8.8	85			0.44		150	13	30
13213000	12/19/2006	10:00	1.3		796	503	12.8	97			0.47		100	14	30
13213000	2/20/2007	9:20	5.9		785	511	11.3	99			0.49		99	19	40
13213000	4/10/2007	9:00	8.8		658	332	9.8	91	8		0.41		770	57	101
13213000	5/15/2007	8:40	14.8		548	380	8.3	89	7.7		0.36		1400	66	98
13213000	6/19/2007	8:15	17.1		967	303	7.9	88	7.3		0.3		110	59	154
13213000	7/17/2007	8:00	20.5		931	319	6.9	84	7.2		0.3		410	48	121
13213000	8/7/2007	8:45	18.6		712	373	7.6	89	6.9		0.28		120	22	42
13213000	9/18/2007	9:00	15.4		680	418	7.6	83	7.6		0.34		280	37	68
13213000	11/20/2007	8:45	8.9		774	480	9.6	88	7.4		0.45		68		
13213000	1/9/2008	11:00	3.3		753	505	11.5	93	7.8		0.4		91		
13213000	3/19/2008	9:10	9.2		812	469	8.8	83	7.9		0.13		76		

WT = Water Temperature; *C = degrees Celsius; AT = air Temperature; Q = discharge; cfs = cubic feet per second; SpC = Specific Conductance; uS/cm^3 = microSiemens per cubic centimeter; DO = Dissolved Oxygen; mg/L = milligrams per liter; % sat = percent saturation; Amm Dis. = Dissolved Ammonia; TP = Total Phosphorus; OP Dis. = Dissolved Ortho-Phosphorus; cfu = colony-forming units; SSC = Suspended Sediment Concentration; SSQ = Suspended Sediment Discharge

Table C-2. Data provided by the Idaho State Department of Agriculture from locations in the Lower Boise River subbasin between 1998 and 2007.

ISDA Water Quality Analysis														
Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/ cm^3)	TDS	pH	Q (cfs)	TSS (mg/ L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/ L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
Sand Hollow														
5/6/1998	7.3	15.5	73.3	400	275	7.99	111	220	22	1.7	0.52	0.17	3200	1500
5/27/1998	8.0	10.9	72.5	389	268	8.6	na	36	4	1.5	0.27	0.18	3600*	3500*
6/10/1998	7.2	15.3	72	352	243	7.87	134.5	140	13	1.4	0.4	0.15	3600	3600
6/24/1998	8.0	16.2	80.6	414	202	8.43	111.6	130	18	2.1	0.41	0.18	2600	<33
7/8/1998	6.9	20.3	76.2	440	215	7.93	122.2	200	19	1.8	0.45	0.19	4000	470
7/23/1998	6.7	20.9	75.3	453	221	8.13	116.3	380	26	2.2	0.56	0.22	4300	650
8/5/1998	6.5	20.7	72.9	471	230	7.99	120.4	170	16	1.9	0.45	0.21	4300	3800
9/2/1998	7.9	18.8	84.8	431	211	7.74	121.1	97	10	1.9	0.37	0.21	1800	1300
9/16/1998	7.3	18.3	77.6	509	248	8.1	125.41	64	8	2.3	0.3	0.2	1300	400
9/30/1998	8.1	15.1	80.1	479	234	8.18	128.5	54	6	2.2	0.27	0.17	400	250
water off														
10/15/1998	9.7	10.9	87.8	556	270	8.24	93.5	47	4	2.7	0.28	0.19	350	300
10/29/1998	10.2	9.2	88.5	680	335	8.24	65.2	29	4	3.9	0.31	0.23	400	360
11/18/1998	10.4	8.2	88.0	674	327	8.44	63	35	5	3.6	0.33	0.26	1200	180
12/10/1998	13.1	3.1	97.9	704	343	8.3	53.9	54	7	4.9	0.39	0.26	570	270
1/14/1999	11.4	5.3	89.7	450	365	8.26	44.1	57	7	4.4	0.35	0.23	500	500
2/10/1999	11.8	2.8	87.5	787	385	8.31	51	92	10	4.9	0.33	0.22	300	300
3/9/1999	10.8	5.8	86.3	731	424	8.38	41.8	40	6	4.1	0.22	0.12	230	230
4/6/1999	9.5	7.6	79.2			8.02	51.2	89	10	3.3	0.3	0.14	700	200
4/24/2008	10.2	8.9	88.9	477	234	8.35	106.3	113			0.481	0.268		>2400
5/8/2008	8.6	11.5	79.3	525	257	8.12	98.3	76.3			0.421	0.224		730
5/22/2008	9.4	10.5	84.1	406	199	7.64	166.3	127			0.456	0.2		1000
6/5/2008	8.6	12.5	81.6	438	215	8.12	187.7	66.5			0.346	0.174		730
6/19/2008	8.0	16.5	81.8	494	242	7.61	114.2	103			0.438	0.221		580
7/2/2008	7.3	19.7	80.1	489	240	8.02	115.1	112			0.538	0.273		1100
7/17/2008	7.4	19.1	80.4	427	209	7.84	204.2	180			0.49	0.219		1000
7/31/2008	7.9	17.8	82.8	442	217	8.12	152.5	117			0.42	0.196		1000
8/14/2008	7.4	19.0	80.0	470	231	8.22	150.2	118			0.437	0.236		730

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/cm3)	TDS	pH	Q (cfs)	TSS (mg/L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
8/28/2008	7.9	16.2	80.8	449	220	7.98	168.8	62.1			0.368	0.219		870
9/11/2008	8.9	14.1	86.1	514	252	8.02	162.7	34			0.271	0.183		250
9/25/2008	8.6	14.1	83.3	540	265	7.93	176	30.9			0.241	0.186		190
Dixie Slough														
4/4/2000	10.3	8.6		268	136	8.29	47	26	4	0.28	0.32	0.25	820	300
4/18/2000	8.2	11.8	76.1	373	186	7.81	37	146	18	1.91	0.39	0.24	na	na
5/3/2000	8.3	13.2	79.4	395	198	7.52	80	74	7	1.26	0.32	0.23	3400	3300
5/16/2000	7.8	14.1	76.1	345	174	7.96	241	80	8	1.75	0.36	0.24	1700	1600
5/31/2000	10.4	12.8	98.1	555	276	7.94	250	63	<2	2.06	0.38	0.29	2500	1200
6/14/2000	10.2	16.7	104.5	393	197	7.73	209	43	6	2.01	0.36	0.28	630	530
6/27/2000	8.5	18.0	89.5	434	217	7.64	201	60	7	1.55	0.33	0.3	870	530
7/11/2000	8.7	19.3	94.5	390	197	7.41	250	59	4	1.56	0.47	0.32	1100	400
7/25/2000	7.1	19.7	77.9	395	199	7.34	250	48	6	1.42	0.45	0.35	2200	2200
8/3/2000	6.0	20	65.2	401	201	7.76	297	53	9	1.58	0.36	0.32	730	730
8/22/2000	6.8	17.0	69.9	402	201	7.83	297	24	<2	1.84	0.29	0.29	1000	770
9/6/2000	7.5	15.0	74.1	405	201	7.86	347	18	3	2.19	0.33	0.32	3200	670
9/19/2000	6.9	17.7	72.8	431	223	7.83	269	20	6	2.11	0.32	0.31	1200	930
10/3/2000	8.1	13.2	77.3	447	216	7.94	290	20	3	2.4	0.29	0.29	1600	770
10/18/2000	8.7	12.5	81.8	555	268	7.98	245	13	<2	3.41	0.34	0.33	100	100
11/14/2000	11.2	6.9	91.8	755	366	8.27	76	9	2	4.6	0.2	0.15	66	33
12/14/2000	10.7	6.5	86.7	752	376	8.38	38	7	<2	4.53	0.21	0.16	130	100
1/30/2001	11.8	3.3	88.2	792	386	8.36	20	19	5	5.66	0.19	0.11	210	150
2/21/2001	9.8	6.9	80.6	673	333	8.14	68	142	22	4.2	1.09	0.81	240	21
3/19/2001	11.3	11.4	103.6	731	367	8.41	22	15	4	4.36	0.21	0.13	1100	210
Conway Gulch														
4/24/2008	10.9	9.8	96.2	608	298	8.32	22.62	54			0.256	0.15		59
5/8/2008	9.8	10.7	88.8	475	233	8.28	43.4	272			0.73	0.181		390
5/22/2008	10.1	10.3	90.7	473	232	8.21	41.9	256			0.625	0.166		1200
6/5/2008	9.3	12.2	86.8	464	227	8.21	48.2	116			0.35	0.119		240
6/19/2008	8.9	14.4	86.8	573	281	8.15	35.4	336			0.665	0.156		340
7/2/2008	8.6	16.7	89.2	538	264	8.16	40.9	669			0.94	0.187		310
7/17/2008	8.7	16.4	88.7	509	249	8.13	37.3	390			0.855	0.191		240

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/ cm3)	TDS	pH	Q (cfs)	TSS (mg/ L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/ L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
7/31/2008	8.6	15.5	87.0	533	261	8.22	46	197			0.476	0.15		370
8/14/2008	8.5	16.4	86.2	558	273	8.27	41.4	142			0.333	0.157		180
8/28/2008	9.0	14.7	88.2	544	267	8.19	41.5	58			0.249	0.146		120
9/11/2008	9.1	13.5	87.5	526	258	7.87	53.6	37			0.221	0.121		260
9/25/2008	8.8	14.1	85.4	500	245	7.87	56	57			0.208	0.134		72
10/9/2008	9.7	11.1	88.3	566	277	7.98	40.6	34			0.189	0.121		110
4/24/2008	10.9	9.8	96.2	608	298	8.32	22.62	54			0.256	0.15		59
5/8/2008	9.8	10.7	88.8	475	233	8.28	43.4	272			0.73	0.181		390
Indian Creek Location: I-1														
4/27/1998	no sample - extreme depth and velocity													
5/4/1998	no sample - extreme depth and velocity													
5/18/1998	no sample - extreme depth and velocity													
5/26/1998	8.6	12.6	81.0	485	334	8.02	na	48	5	3.9	0.44	0.35	1600*	1000*
6/9/1998	8.4	14.5	82.4	676	466	8.29	na	33	5	6.4	1.3	0.65	900	830
6/23/1998	8.3	15.2	82.3	638	311	7.42	171.1	27	4	5.9	0.89	0.86	470	400
7/7/1998	8.1	17.0	84.0	590	287	7.78	na	50	2	5.2	0.54	0.45	1900	500
7/21/1998	8.0	17.8	83.9	591	288	7.75	na	76	9	4.7	0.66	0.58	1600	750
8/4/1998	7.7	18.3	82.4	593	290	7.89	na	53	6	4.8	0.69	0.64	2700	2300
8/31/1998	8.9	17.2	92.8	557	272	7.89	na	40	6	4.1	0.67	0.61	800	700
9/15/1998	8.1	16.9	83.8	534	260	8.33	na	42	5	4.3	0.54	0.52	2100	700
9/28/1998	8.4	15.6	84.2	588	286	8.18	na	31	<4	4.1	0.54	0.47	600	200
10/7/1998							327.5							
water off														
10/14/1998	9.0	13.5	86.3	688	337	8.13		27	8	5	0.61	0.56	300	100
10/28/1998	9.0	13.7	86.9	733	357	8.1	na	29	4	5.6	0.45	0.39	480	140
11/17/1998	na	na	na	734	358	8.48		35	4	6	0.62	0.57	420	280
12/8/1997	10	10.2	88.8	741	362	8.02	na	21	4	13	1.9	1.6	430	170
1/12/1999	9.6	10.4	85.6	733	355	8.1		58	7	6.6	0.63	0.52	470	130
2/9/1999	na	9.2	na	698	344	8.25	na	89	10	7.4	0.7	0.52	550	550
3/8/1999	9.5	9.7	83.6	778	445	8.24	217.4	60	7	7.3	0.54	0.41	230	230
4/5/1999		10.1		609	350	7.97	224	86	11	5.2	0.59	0.47	230	130

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/cm3)	TDS	pH	Q (cfs)	TSS (mg/L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
East Hartley Drain														
4/5/2001	10.9	10.5	97.7	609	312	8.34	14.6	8			0.29	0.25	23	23
4/17/2001	9.5	13.2	91.0	479	246	8.17	18.9	61			0.28	0.21	460	1100
5/1/2001	9.8	12.3	91.3	318	159	8.16	51.5	150			0.38	0.24	>2400	1100
5/15/2001	8.8	13.4	83.9	302	153	7.84	83.3	140			0.47	0.28	11000	11000
5/30/2001	8.8	14.0	85.3	268	137	7.99	78.3	76			0.27	0.19	>24000	>24000
6/12/2001	8.2	14.2	80.0	307	153	7.99	73.2	52			0.28	0.2	1500	1500
6/27/2001	6.3	18.3	66.9	342	175	7.77	63	75			0.34	0.3	2400	2400
7/10/2001		19.3		345	181	7.86	67.1	123			0.35	0.25	4600	750
7/31/2001		16.3		348	174	7.92	71.2	52			0.3	0.24	500	500
8/9/2001	7.2	18.0	75.5	403	202	7.93	69.1	43			0.38	0.32	>25000	>25000
8/20/2001	8.1	16.5	83.4	370	186	8.05	73.5	36			0.28	0.26	700	2900
9/6/2001	8.9	15.0	88.6	381	191	na	80.7	19			0.33	0.28	1100	2800
9/24/2001	8.6	14.8	84.8	482	245	8.05	45.2	70			0.31	0.26	200	6200
10/2/2001	9.2	14.2	89.6	502	255	7.98	42.3	7			0.27	0.27	250	250
10/16/2001	10.2	12.5	93.6	500	248	8.29	37.1	15			0.24	0.24	100	100
11/13/2001	11.0	12.4	98.1	591	295	8.08	17.3	8			0.26	0.26	330	330
12/11/2001	no samples collected													
1/29/2002	11.1	6.0	89.5	618	318	8.01	17.5	66			0.21	0.21	130	230
2/26/2002	13.3	5.2	104.3	637	311	8.1	15.1	46			0.24	0.21	170	70
3/20/2002	13.9	10.5	125.2	597	299	8.4	14.6	17			0.23	0.23	100	180
11/1/2006	10.1	10.5	90.15	570	280	7.9	14.6				0.32	0.24		
1/25/2007	10.1	9.5	87.95	596	288	8.2	9.5				0.28	0.25		
11/29/2007	8.6	10.9	77.7	640		8.0	10.3				0.32	0.27		
West Hartley Drain														
4/5/2001	10.2	9.0	88.3	499	253	8.04	3.1	9			0.4	0.32	23	23
4/17/2001	9.1	12.2	84.6	294	145	7.87	6.7	15			0.28	0.24	1100	>2400
5/1/2001	9.3	11.4	85.3	212	108	7.9	25.3	67			0.24	0.18	460	460
5/15/2001	8.1	13.9	78.9	176	88	7.74	45.3	95			0.19	0.14	930	930
5/30/2001	7.7	15.1	76.1	146	73	7.77	43	48			0.17	0.12	11000	11000
6/12/2001	8.0	15.0	79.1	167	82	7.71	31.3	36			0.2	0.13	150	90
6/27/2001	6.0	19.4	65.2	184	92	7.71	24.3	30			0.17	0.16	2400	2400

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/ cm3)	TDS	pH	Q (cfs)	TSS (mg/ L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/ L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
7/10/2001		20.3		199	102	7.73	25	38			0.2	0.17	1500	1500
7/31/2001		17.3		204	103	7.73	42.1	23			0.23	0.19	<100	700
8/9/2001	7.2	19.5	78.5	223	113	7.76	26.1	22			0.21	0.18	1600	1600
8/20/2001	8.2	17.6	86.2	222	113	7.93	33.1	25			0.23	0.17	1400	1400
9/6/2001	8.5	16.4	87.2	185	92	na	35.6	11			0.15	0.12	700	400
9/24/2001	8.5	14.9	84.4	384	193	7.98	9.0	8			0.3	0.3	1700	100
10/2/2001	9.0	13.9	87.3	412	211	7.97	7.4	4			0.33	0.33	200	200
10/16/2001	9.4	12.9	89.0	428	213	8.16	5.9	6			0.37	0.36	500	900
11/13/2001	9.6	12.5	90.6	507	254	8	6.0	2			0.37	0.37	170	170
12/11/2001	no samples collected			540	270									
1/29/2002	11.6	6.3	94.1	588	280	8.09	3.8	14			0.4	0.34	280	340
2/26/2002	13.1	5.8	105.1	564	269	8.05	3.1	7			0.32	0.32	80	70
3/20/2002	11.7	10.4	104.9	493	250	8.13	2.8	14			0.35	0.35	140	240
11/1/2006	7.4	9.1	64.3	406	196	7.40	5.7				0.75	0.47		
1/25/2007	10.1	7.0	84.3	405	192	7.90	3.4				0.55	0.37		
11/29/2007	7.8	9.7	68.7	434		7.42	4.0				0.64	0.51		
Mason Creek-mouth Location M-1														
4/27/1998	no samples collected			540	270									
5/4/1998	no samples collected			540	270									
5/26/1998	9.3	10.8	83.9	312	216		na	85	8	2.1	0.27	0.13	1900*	1400*
6/9/1998	8.9	13.8	85.9	365	250	8.5	st.2.8'	130	12	3	0.36	0.2	1600	870
6/23/1998	8.9	15.4	89.5	363	175	8.05	na	160	12	3.1	0.47	0.29	3100	2500
7/7/1998	8.1	17.4	84.8	379	186	7.92	na	150	10	3.2	0.45	0.25	2500	600
7/21/1998	7.5	18.4	80.2	409	199	7.95	na	140	12	3.7	0.44	0.3	4700	1400
8/4/1998	7.4	18.4	79.4	414	201	7.82	na	120	11	3.4	0.43	0.28	25000	2700
8/31/1998	8.7	18.8	93.5	392	191	8.01	na	61	6	2.8	0.35	0.28	6700	6700
9/15/1998	7.9	16.8	81.1	400	195	7.98	na	47	5	2.8	0.28	0.22	1300	200
9/28/1998	8.5	15.4	85.6	397	193	7.91	too deep	33	5	2.3	0.28	0.21	300	200
water off														
10/14/1998	9.5	12.3	88.4	673	328	8.21	too deep	25	7	5.00	0.22	0.19	600	200

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/cm3)	TDS	pH	Q (cfs)	TSS (mg/L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
10/28/1998	10.0	12.4	93.6	671	327	8.2	too deep	12	<4	5.3	0.24	0.18	280	280
11/17/1998	9.9	11.7	91.3	664	324	8.23	74.5	9	<4	4.9	0.2	0.15	220	200
12/8/1998	11.5	8.0	96.6	664	324	8.43	69.5	24	<4	5.5	0.2	0.19	130	130
1/12/1999	10.8	7.9	90.5	663	323	8.45	65.5	35	5	4.6	0.24	0.17	400	270
2/9/1999	10.2	8.2	86.8	640	312	8.32	74.5	120	14	5.1	0.38	0.18	2700	330
3/8/1999	11.6	7.5	96.9	700	398	8.57	62.3	77	10	5.6	0.26	0.14	170	170
4/5/1999	11.6	8.9	100.3	686	389	8.31	52.5	27	<4	4.7	0.23	0.16	130	50
4/24/2008	10.8	9.2	93.7	362	178	8.31	138.4	136			0.412	0.241		140
5/8/2008	9.8	11.0	89.2	462	226	8.14	108	71.2			0.61	0.313		690
5/22/2008	10.2	9.6	89.7	385	189	8.2	295	88.9			0.407	0.239		730
6/5/2008	9.4	12.3	88.1	422	207	8.18	282	71.5			0.363	0.22		820
6/19/2008	9.0	15.0	88.8	505	248	8.18	141.4	136			0.442	0.269		730
7/2/2008	8.2	17.1	84.8	381	187	8.36	151.6	106			0.415	0.278		520
7/17/2008	8.2	17.0	84.8	373	183	8.09	154.6	71.6			0.325	0.22		690
7/31/2008	8.6	16.6	87.8	389	190	8.24	146.2	87.4			0.344	0.212		310
8/14/2008	8.1	17.4	84.6	406	199	8.08	139.6	51.6			0.324	0.237		240
8/28/2008	8.5	15.5	84.8	399	196	8.23	155	39.2			0.292	0.23		170
9/11/2008	9.3	14.1	90.3	412	202	7.9	136.2	32.3			0.248	0.192		410
9/25/2008	8.7	14.7	85.5	412	202	7.91	141.6	26.1			0.216	0.193		180
10/9/2008	10.2	11.0	92.6	522	256	7.88	114.7	21.5			0.262	0.206		170
Willow Creek														
4/4/2000	11.0	14.6	108.9	293	150	8.91	0	1	<2	0.14	0.01	0.17	10	10
4/18/2000	8.8	12.5	82.7	132	65.3	7.65	36.5	49	8	0.05	0.44	0.14	300	240
5/3/2000	8.7	14.0	84.3	107	53	7.88	38.7	25	3	0.08	0.28	0.17	780	780
5/16/2000	8.6	13.1	81.9	102	52	7.79	54.5	27	4	0.07	0.36	0.22	560	560
5/31/2000	10.7	12.8	101.3	243	112	7.78	40.8	14	<2	0.07	0.41	0.12	480	300
6/14/2000	10.4	16.1	106.0	157	79	7.44	48.6	27	4	0.11	0.01	0.17	770	430
6/27/2000	10.1	16.7	103.8	160	80	7.65	11.5	7	2	0.19	0.7	0.22	570	570
7/11/2000	10.7	18.3	114.4	157	79	7.26	17.2	10	2	0.21	0.5	0.22	1700	1700
7/25/2000	9.4	18.4	99.8	180	91	7.76	4.0	2	<2	0.21	0.67	0.21	1900	1300
8/3/2000	8.3	18.9	89.0	174	88	7.62	27.6	15	3	0.16	0.53	0.21	3300	3300

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/cm^3)	TDS	pH	Q (cfs)	TSS (mg/L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
8/22/2000	8.9	16.1	90.5	181	91	7.67	4.0	1	3	0.19	0.66	0.19	>8300	800
9/6/2000	9.2	14.1	89.7	102	51	8	38.5	7	2	0.07	0.22	0.1	370	330
9/19/2000	8.3	18.1	87.6	128	64	7.8	15.1	6	3	0.1	0.42	0.11	2000	1900
10/3/2000	9.8	11.0	88.3	156	78.3	7.64	4.9	6	3	0.12	0.54	0.12	670	230
10/18/2000	9.4	11.3	85.9	314	154	7.99	4.8	2	<2	0.22	2.08	0.23	230	130
11/14/2000	11.9	4.1	91.0	419	207	8.22	1.1	4	<2	0.21	2.29	0.23	100	100
12/14/2000	12.4	3.2	92.8	436	217	8.4	0.9	8	<2	0.25	2.68	0.31	33	<33
1/30/2001	Just a trickle, too shallow, no data													
2/21/2001	12.6	1.7	89.9	199	96	8.01	7.8	196	36	0.26	0.81	0.69	240	240
3/19/2001	9.6	10.1	84.9	374	191	8.06	0.7	4	2	0.23	1.87	0.31	93	93
4/24/2008	10.7	10.0	95.2	132	65	8.07	44.2	30.4			0.161	0.075		57
5/8/2008	10.3	12.1	95.2	158	77	8.07	35.7	25			0.151	0.089		170
5/22/2008	10.2	11.1	92.4	128	63	8.23	73.6	70.3			0.241	0.083		1300
6/5/2008	9.6	13.7	92.3	129	63	8	83.5	22.2			0.142	0.074		370
6/19/2008	8.9	17.4	93.4	148	73	8.11	36.2	21.3			0.146	0.104		650
7/2/2008	8.0	20.4	88.3	211	103	7.8	12.9	14.4			0.248	0.204		1100
7/17/2008	8.5	19.8	92.8	130	64	7.8	27.2	27.1			0.144	0.091		290
7/31/2008	8.6	19.0	93.2	136	67	8.15	42.5	27.4			0.145	0.098		770
8/14/2008	7.9	20.0	87.4	139	68	8.04	44.6	15			0.147	0.109		180
8/28/2008	9.3	16.9	96.2	128	62	8.05	27.1	15.3			0.136	0.096		330
9/11/2008	9.4	15.7	95.0	136	67	7.8	40.0	13.9			0.115	0.07		160
9/25/2008	9.4	15.1	92.9	112	55	7.82	39.2	30.9			0.086	0.046		86
10/9/2008	10.6	10.9	96.0	132	65	7.93	36.8	10.6			0.08	0.042		79
Dry Creek														
4/17/2008	12.0	5.4	95.6	176	86	7.95	24.5	27.8			0.179	0.071		96
5/1/2008	11.9	5.9	95.2	291	143	7.73	22.1	31.5			0.133	0.055		93
5/15/2008	8.7	12.3	81.8	497	243	7.5	9.9	210			0.499	0.088		260
5/29/2008	8.3	12.8	78.2	486	238	7.54	4.1	19.7			0.162	0.099		66
6/12/2008	7.7	12.3	72.1	601	295	7.48	3.6	3.5			0.122	0.098		130
6/26/2008	7.2	16.2		701	343	7.66	1.5	1.8			0.119	0.109		150
7/10/2008	9.3	15.6	93.5	742	364	7.74	0.6	1.5			0.12	0.12		68

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/ cm^3)	TDS	pH	Q (cfs)	TSS (mg/ L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/ L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
Mill Slough near mouth-Location MS-1														
4/23/2003	8.5	11.6	82.3	259	141	7.65	12.4	22			0.23	0.19		
5/7/2003	10.6	12.3	99.1	210	113	7.62	46.8	29			0.17	0.13		
5/21/2003	10.5	13.0	100.0	237	122	7.43	24	15			0.18	0.17		
6/3/2003	9.2	14.1	84.4	233	119	7.22	29	15			0.19	0.17		
6/18/2003	7.7	16.6	79.4	271	141	7.31	15.7	12			0.28	0.28		
7/1/2003	7.9	17.5	82.3	271	140	7.1	18	3			0.26	0.26		
7/15/2003	7.6	17.5	79.8	261	136	na	17.7	9			0.23	0.21		
7/30/2003	6.4	18.8	69.3	253	132	na	21.2	8			0.24	0.26		
8/26/2003	6.1	18.0	64.3	243	128		29.2	7			0.18	0.18		
Fifteenmile Creek														
4/29/1998	8.3	11.0	75.5	256	176	na	142.4	83	6	1.4	0.43	0.33	2200	
5/6/1998	8.4	12.9	79.8	250	173	7.66	153.1	100	10	1.5	0.48	0.3	1700	67
5/27/1998	8.9	10.5	88.0	196	134	7.64	na	32	4	1.1	0.3	0.2	6600*	6400*
6/10/1998	8.4	13.4	80.4	213	147	8.03	na	61	10	1.6	0.28	0.18	1200	870
6/24/1998	8.4	14.6	82.8	251	122	8.48	na	110	12	2.1	0.4	0.24	1800	500
7/8/1998	7.6	17.4	79.9	282	137	8.18	na	130	13	2.2	0.41	0.26	2300	400
7/23/1998	7.4	18.2	78.9	270	132	8.02	na	140	12	2.2	0.39	0.26	11000	1100
8/5/1998	7.4	18.3	79.3	301	146	7.67	na	110	11	2.4	0.39	0.26	14000	2600
9/2/1998	8.8	19.6	95.9	251	122	8.02	na	51	5	1.7	0.28	0.22	4700	<100
9/16/1998	7.6	17.7	79.6	288	141	7.95	too deep	30	5	2	0.24	0.19	600	600
9/29/1998	8.8	15.2	87.6	278	135	8.06	too deep	29	5	1.6	0.24	0.17	150	100
4/24/2008	11.4	8.1	96.3	189	93	8.24	187.4	70.4			0.349	0.228		39
5/8/2008	12.1	10.5	108.5	269	132	8.35	70.1	56.5			0.379	0.279		170
5/22/2008	10.9	9.6	95.8	191	94	8.25	191.1	66			0.312	0.18		980
6/5/2008	10.0	11.7	91.8	198	97	8	309.8	37.1			0.308	0.187		980
6/19/2008	9.6	15.0	94.9	273	134	8.17	112.7	76.4			0.326	0.231		1400
7/2/2008	8.8	16.7	90.9	284	139	7.92	98.7	91.4			0.378	0.229		1400
7/17/2008	9.1	16.4	92.5	252	123	8.05	85.8	85			0.33	0.213		580
7/31/2008	9.7	17.0	100.9	261	128	8.29	93.7	80.7			0.312	0.218		290
8/14/2008	9.4	17.6	98.5	278	136	8.15	98.3	40.8			0.341	0.263		490

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/ cm^3)	TDS	pH	Q (cfs)	TSS (mg/ L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/ L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
8/28/2008	9.7	15.3	97.0	282	138	8.23	104.2	29.7			0.357	0.286		370
9/11/2008	10.4	14.2	101.7	261	128	7.96	108.6	18.2			0.276	0.224		240
9/25/2008	9.2	14.7	91.0	255	125	7.93	111.8	27.8			0.277	0.219		180
water off														
10/15/1998	10.5	10.9	94.6	527	258	8.2	49.6	4	<4	3.7	0.19	0.18	300	150
10/29/1998	12.4	9.7	109.6	630	308	8.32	31.3	2	<4	4.7	0.33	0.27	300	140
11/18/1998	11.8	8.1	99.7	612	299	8.5	28.3	2	<4	4.1	0.25	0.21	800	260
12/10/1998	13.9	2.7	102.5	616	300	7.99	23.6	10	<4	4.7	0.15	0.15	270	230
1/14/1999	11.5	4.8	89.6	614	299	8.24	22.6	17	4	3.9	0.26	0.21	570	430
2/10/1999	12.2	2.7	89.5	603	295	8.2	27.6	33	7	4.8	0.3	0.22	530	530
3/9/1999	no samples collected, location backed-up by Boise River													
4/6/1999	no samples collected, location backed-up by Boise River													
Tenmile Creek														
4/29/1998	9.2	10.5	82.0	215	148	na	51.4	55	<4	1.2	0.25	0.14	900	
5/6/1998	9.1	13.6	87.6	222	153	7.99	66.8	92	13	1.3	0.38	0.25	1000	600
5/27/1998	9.7	10.9	86.8	161	110	8.12	na	34	5	0.86	0.18	0.1	2200*	2000*
6/10/1998	9.3	13.7	90.6	181	125	8.41	67.4	49	<4	1.3	0.17	0.099	330	300
6/24/1998	8.8	14.7	87.0	243	117	8.59	71.1	65	11	1.9	0.27	0.18	2500	570
7/8/1998	8.3	17.7	87.3	310	154	8.32	63.5	86	10	2.4	0.31	0.2	1900	370
7/23/1998	7.7	18.4	82.6	250	122	7.79	69.8	130	13	2.1	0.31	0.2	1700	1000
8/5/1998	7.6	18.1	80.6	291	142	7.68	60.5	73	7	2.3	0.28	0.18	2600	2000
9/2/1998	9.1	20.5	100.7	252	123	7.32	56.4	28	5	2	0.22	0.18	3200	100
9/16/1998	7.9	17.4	82.0	297	146	7.9	57.4	22	4	2.2	0.23	0.18	1100	600
9/29/1998	9.2	15.2	91.5	303	148	8.01	51.1	17	5	2.1	0.21	0.18	300	250
water off														
10/15/1998	11.1	11.2	101.7	493	240	8.08	18.2	2	<4	4.3	0.18	0.18	100	50
10/29/1998	14.1	10.2	125.2	564	276	8.47	10.9	2	<4	4.8	0.25	0.21	60	20
11/18/1998	13.6	8.6	116.6	565	275	8.27	9.01	2	<4	4.6	0.23	0.19	<20	<20
12/10/1998	16.9	3.5	127.1	574	280	8.43	6.52	2	<4	6.2	0.24	0.2	67	33
1/14/1999	11.4	5.2	89.9	596	290		4.98	2	<4	5	0.25	0.24	1300	1300
2/10/1999	12.3	3.8	93.6	392	289	8.33	6.03	4	<4	6.1	0.25	0.24	100	67

Date	DO (mg/L)	WT (*C)	DO (% sat.)	SpC (uS/cm^3)	TDS	pH	Q (cfs)	TSS (mg/L)	TVS	Nitrate/ Nitrite (mg/L)	TP (mg/L)	OP Dis. (mg/L)	FC (cfu/100 mL)	*E. coli* (cfu/100 mL)
3/9/1999	11.7	5.2	91.6	382	216	8.62	13.3	11	<4	3.4	0.14	0.11	67	67
4/6/1999	10.4	6.2	84.5			8.12	72.7	82	12	0.62	0.15	0.044	200	200
Fivemile Creek														
4/29/1998	8.9	10.6	80.3	200	137	na	57.8	88	9	1.1	0.47	0.32	310	
5/6/1998	9.0	13.9	87.3	193	132	7.74	57.3	80	10	1.1	0.42	0.28	570	300
5/27/1998	9.3	11.2	84.6	205	141	8.52	na	40	7	1.3	0.31	0.19	5400*	4800*
6/10/1998	9.0	14.6	89.2	220	151	8.16	74.1	45	7	1.7	0.28	0.21	900	700
6/24/1998	8.4	15.5	84.4	247	120	7.45	82.4	170	19	2	0.48	0.27	1800	130
7/8/1998	7.6	17.4	79.9	263	128	7.65	97.3	110	9	2.1	0.41	0.26	2900	670
7/23/1998	7.3	19.1	78.5	265	129	7.93	84	180	15	2.3	0.48	0.3	8200	1500
8/5/1998	7.2	18.7	77.2	298	145	7.65	101.4	97	10	2.7	0.45	0.3	8800	8200
9/2/1998	7.7	20.8	86.5	240	117	7.72	too deep	37	6	1.5	0.29	0.22	300	100
9/16/1998	7.4	17.9	77.8	269	131	8.57	too deep	30	5	1.6	0.22	0.13	1800	300
9/29/1998	7.7	15.8	78.3	273	133	7.88	>4.0'	31	7	1.6	0.26	0.2	400	250
water off														
10/15/1998	11.3	11.2	102.6	553	269	8.3	41.2	13	<4	3.8	0.2	0.18	50	<50
10/29/1998	13.7	9.8	121.3	613	299	8.5	26	2	<4	4	0.26	0.22	100	20
11/18/1998	13.0	8.2	110.7	594	290	8.46	18.8	2	<4	3.6	0.23	0.19	200	100
12/10/1998	13.9	3.0	103.2	594	290	8.36	14.7	41	8	4.2	0.28	0.19	100	67
1/14/1999	11.9	5.3	94.0	600	292	8.32	13.4	45	7	3.4	0.28	0.19	500	500
2/10/1999	12.4	3.3	93.0	na	na	8.38	17.7	61	9	4.5	0.32	0.2	930	800
3/9/1999	11.8	6.2	86.0	606	344	8.42	16.4	29	5	4.4	0.26	0.19	170	170
4/6/1999	10.5	7.3	87.5			8.23	30	110	16	2	0.32	0.11	500	500

DO = Dissolved Oxygen; mg/L = milligrams per liter; WT = Water Temperature; *C = degrees Celsius; % sat = percent saturation; SpC Specific Conductance; uS/cm^3 = microSiemens per cubic centimeter; TDS = Total Dissolved Solids; Q = discharge; cfs = cubic feet per second; TSS = Total Suspended Sediment; TVS = Total Volatile Sediments; TP = Total Phosphorus; OP Dis. = Dissolved Ortho-Phosphorus; FC = Fecal Coliform; cfu = colony-forming units; mlfx = malfunction; * = estimated value

Table C-3. Data collected by City of Nampa near Indian Creek Wastewater Treatment Plant between 2003 and 2008.

City of Nampa

Indian Creek Wastewater Treatment Plant (WWTP)

***E. coli* (cfu/100 mL)**

Date	Upstream WWTP	Down stream WWTP
3/28/2006	39.9	34.1
4/4/2006	127.4	
5/7/2008	313	
5/13/2008	290.9	

Indian Creek Water Quality Analysis Results Upstream and Downstream of WWTP 2003-2007

Upstream									Downstream							
Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
1/6/2003	19.0	20	8.0			220	0.38	0.70	1/6/2003	19	7.7			100	0.28	2.05
1/14/2003	18.0	14	8.0			40	0.15		1/14/2003	14	7.3			20	0.18	
1/21/2003	17.0	18	8.0			160	0.09		1/21/2003	17	7.7			160	0.09	
1/28/2003	26.0	22	8.2	10.0	13	120	0.10		1/28/2003	24	7.8	9.4	14	140	0.14	
2/4/2003	19.0	25	8.1			120	0.06	0.96	2/4/2003	20	7.5			100	0.06	3.25
2/11/2003	24.0	30	8.0			200	0.07		2/11/2003	17	7.6			160	0.06	
2/18/2003	23.0	28	8.0	10.9	12.5	80	0.04		2/18/2003	16	7.7	10.0	13.5	40	0.05	
2/25/2003	22.0	29	8.0			220	0.05		2/25/2003	27	7.5			120	0.06	
3/4/2003	22.5	19	8.0	11.2	12.5	140	0.05	0.92	3/4/2003	37	7.7	10.2	14	60	0.06	3.00
3/11/2008	17.0	21	8.0			20	0.05		3/11/2008	16	7.6			40	0.05	
3/18/2003	14.0	23	8.1			300	0.05		3/18/2003	25	7.7			180	0.05	
3/25/2003	23.0	24	8.0	14.8	12.5	180	0.06		3/25/2003	19	7.8	12.8	14	120	0.06	
4/1/2003	18.0	8	7.9	12.6	14.5	580	0.05	0.80	4/1/2003	10	7.6	12.8	16	120	0.06	3.35
4/8/2003	77.0	26	7.9	13.2	11.5	<33	0.05		4/8/2003	24	7.6	13.0	12	167	0.06	
4/15/2003	67.0	22	7.9	14.4	11.5	100	0.07		4/15/2003	20	7.8	13.2	13	160	0.07	
4/22/2003	70.0	24	7.9	11.5	12.5	240	0.06		4/22/2003	19	7.6	11.1	14	240	0.07	
4/29/2003	43.0	13	8.0	13.0	13	120	0.05		4/29/2003	13	7.6	12.0	15	140	0.06	
5/6/2003	70.0	15	7.8	10.4	13	80	0.05	0.46	5/6/2003	14	7.5	10.3	14	120	0.05	1.75

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
5/13/2003	68.0	15	7.9			560	0.13		5/13/2003	13	7.6			300	0.11	
5/20/2003	22.5	11	7.9			1020	1.44		5/20/2003	8	7.6			820	0.77	
5/27/2003	38.5	10	7.7			860	0.07		5/27/2003	11	7.5			540	0.08	
6/3/2003	49.5	27	7.9	9.4	17.5	680	0.06	0.62	6/3/2003	18	7.6	9.3	18.5	560	0.07	2.15
6/10/2003	23.0	12	7.7	8.1	21	900	1.03		6/10/2003	11	7.5	7.8	20.5	500	0.63	
6/17/2003	22.5	6	7.8	9.0	20.5	660	0.06		6/17/2003	10	7.6	10.0	21	400	0.06	
6/24/2003	30.3	10	7.8	9.6	18	1460	1.93		6/24/2003	10	7.6	8.6	19	1060	1.25	
7/1/2003	24.0	9	7.8	9.4	20.5	1240	3.26		7/1/2003	9	7.6	9.0	21	780	2.09	
7/8/2003	30.3	5	7.8			660	0.17	0.96	7/8/2003	6	7.7			320	0.11	1.85
7/15/2003	27.0	3	7.8	10.0	21	780	0.05		7/15/2003	3	7.6	9.8	22	460	0.05	
7/22/2003	62.0	2	7.7			440	0.05		7/22/2003	3	7.6			500	0.06	
7/29/2003	67.0	3	7.4			860	0.06		7/29/2003	6	7.4			800	0.09	
8/5/2003	78.0	2	7.7			940	0.05	0.702	8/5/2003	5	7.6			540	0.07	2.90
8/12/2003	77.0	1	7.6			500	0.04		8/12/2003	4	7.6			160	0.05	
8/19/2003	103.0	1	7.8			280	0.07		8/19/2003	3	7.6			320	0.07	
8/26/2003	100.0	3	7.7	7.7	24.5	620	0.07		8/26/2003	5	7.5	6.0	21.5	580	0.07	
9/2/2003	92.0	3	7.7			440	0.04		9/2/2003	4	7.6			340	0.04	
9/9/2003	95.0	3	7.8	8.4	16	220	0.05	0.62	9/9/2003	7	7.6	6.8	18	340	0.06	2.40
9/16/2003	78.0	2	7.7	8.8	17	360	0.05		9/16/2003	7	7.5	8.5	18	260	0.07	
9/23/2003	99.0	5	7.8	9.5	17	480	0.05		9/23/2003	7	7.6	7.8	18.5	440	0.07	
9/30/2003	78.0	14	7.8	9.2	17	1020	0.07		9/30/2003	5	7.6	9.1	19	720	0.10	
10/7/2003	75.0	2	7.8			767	0.04	0.70	10/7/2003	5	7.6			200	0.06	2.30
10/14/2003	66.0	2	7.9			240	0.08		10/14/2003	5	7.7			240	0.09	
10/20/2003	44.0	5	7.9			400	0.06		10/20/2003	1	7.8			500	0.06	
10/28/2003	47.5	<1.0	7.9	9.3	16	220	0.05		10/28/2003	3	7.7	8.6	18	380	0.07	
11/4/2003	3.0	14	7.9	9.3	12	280	0.06	0.78	11/4/2003	6	7.7	9.0	14	80	0.07	2.55
11/12/2003	41.0	2	7.9			60	0.05		11/12/2003	5	7.7			140	0.08	
11/18/2003	38.5	2	8.0			60	0.07		11/18/2003	5	7.7			20	0.07	
11/25/2003	11.5	2	8.0			160	0.09		11/25/2003	7	7.6			140	0.08	
12/2/2003	29.5	2	7.8			160	0.11	0.86	12/2/2003	8	7.6			380	0.09	2.50
12/9/2003	22.5	3	8.0			100	0.10		12/9/2003	5	7.7			60	0.12	
12/16/2003	26.0	9	8.0	9.8	11	220	0.09		12/16/2003	13	7.6	9.0	12.5	240	0.10	

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
12/22/2003	25.5	3	8.0			20	0.07		12/22/2003	9	7.7			80	0.15	
12/29/2003	25.5	6	8.0			220	0.09		12/29/2003	12	7.7			80	0.08	
1/6/2004	22.0	22	8.0	9.5	9	180	0.07	0.66	1/6/2004	24	7.8	9.0	10	20	0.08	1.85
1/13/2004	21.5	22	8.0			360	0.07		1/13/2004	19	7.5			340	0.11	
1/20/2004	21.5	25	8.0			260	0.07		1/20/2004	21	7.7			240	0.07	
1/27/2004	20.8	28	8.0			380	0.08		1/27/2004	24	7.6			720	0.09	
2/3/2004	23.0	19	8			160	0.08	0.52	2/3/2004	18	7.6			40	0.08	2.95
2/10/2004	23.0	24	8.0			320	0.09		2/10/2004	17	7.5			80	0.16	
2/17/2004	27.0	32	7.9			420	0.15		2/17/2004	22	7.6			280	0.08	
2/24/2004	23.5	21	8.0			760	0.11		2/24/2004	16	7.6			220	0.17	
3/2/2004		24	8.0			220	0.08	0.81	3/2/2004	17	7.6			220	0.05	2.80
3/9/2004		18	8.0			60	0.05		3/9/2004	17	7.7			80	0.05	
3/16/2004	18.0	34	8.1	10.4	16	80	0.09		3/16/2004	22	7.6	9.4	16	140	0.09	
3/23/2004	18.0	20	8.1	11.0	17	260	0.06		3/23/2004	19	7.8	10.1	18	400	0.11	
3/30/2004	20.0	27	8.1	10.6	16	220	0.05		3/30/2004	19	7.9	9.5	16.5	300	0.05	
4/6/2004	24.8	20	8.1			280	0.10	0.89	4/6/2004	11	7.7			200	0.09	2.70
4/13/2004	68.0	22	7.9	8.0	13	40	0.05		4/13/2004	21	7.7	9.3	15	<20	0.07	
4/20/2004	18.0	7	7.9	9.8	15	<20	0.16		4/20/2004	7	7.7	9.0	16	140	0.08	
4/27/2004	52.5	22	8.0			340	0.07		4/27/2004	19	7.8			380	0.07	
5/4/2004	25.5	13	7.9	9.6	18.5	980	0.09	0.84	5/4/2004	8	7.8	9.5	19.5	380	0.08	2.90
5/11/2004	54.0	20	7.9	9.6	13	800	0.10		5/11/2004	13	7.7	9.0	14.5	540	0.10	
5/18/2004	41.0	16	7.9			400	0.10		5/18/2004	12	7.7			540	0.09	
5/25/2004	35.0	8	8.0			580	0.15		5/25/2004	13	7.7			320	0.15	
6/1/2004	69.0	13	7.9			460	0.07		6/1/2004	11	7.7			480	0.07	
6/8/2004	28.0	5	8.0			660	0.06	0.76	6/8/2004	7	7.7			120	0.07	2.65
6/15/2004	28.8	10	8.0	9.8	19	800	0.14		6/15/2004	11	7.8	9.0	19	780	0.13	
6/22/2004	23.0	6	8.0	10.2	20.5	640	0.12		6/22/2004	10	7.7	9.5	21	460	0.11	
7/6/2004	79.0	6	7.9			1133	0.08	0.46	7/6/2004	5	7.7			833	0.09	1.30
7/13/2004	61.0	3	7.9	10.2	20	880	0.06		7/13/2004	4	7.8	9.6	21	460	0.07	
7/20/2004	50.3	5	7.8	9.5	21.5		0.27		7/20/2004	6	7.6	8.8	22		0.20	
7/27/2004	64.0	5	7.8			800	0.05		7/27/2004	4	7.7			560	0.05	
8/3/2004	46.5	3	7.8			980	0.06	0.52	8/3/2004	4	7.7			840	0.06	2.45

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
8/10/2004	60.0	4	7.7			1500	1.18		8/10/2004	5	7.6			633	0.86	
8/17/2004	72.0	3	7.7			833	0.11		8/17/2004	4	7.6			633	0.11	
8/24/2004	89.0	3	7.8			767	0.07		8/24/2004	<1	7.6			333	0.08	
8/31/2004	57.0	3	7.8			1220	0.12		8/31/2004	4	7.6			640	0.14	
9/7/2004	77.0	1	7.8			433	0.06	0.54	9/7/2004	4	7.7			233	0.05	2.25
9/14/2004	74.0	1	7.8			500	0.04		9/14/2004	6	7.7			233	0.05	
9/21/2004	95.0	2	7.8	9.1	16	200	0.28		9/21/2004	6	7.7	9.2	16.5	167	0.30	
9/28/2004	79.0	2	7.8	9.1	17.5	367	0.22		9/28/2004	5	7.7	9.1	18.5	133	0.20	
10/5/2004	75.0	2	7.8			580	0.05	0.52	10/5/2004	5	7.7			400	0.06	2.15
10/12/2004	70.0	1	7.9	9.7	14	280	0.06		10/12/2004	2	7.8	8.8	16	220	0.06	
10/19/2004	51.0	<1	7.9			780	0.12		10/19/2004	4	7.7			420	0.14	
10/26/2004	50.3	1	7.9			280	0.11		10/26/2004	4	7.8			120	0.17	
11/2/2004	45.0	2	8.0			300	0.04	0.70	11/2/2004	5	7.8			140	0.16	2.80
11/9/2004	46.5	<1	7.9			1200	0.87		11/9/2004	4	7.7			820	0.52	
11/16/2004	43.0	2	7.9			280	0.06		11/16/2004	9	7.8			260	0.16	
11/23/2004	39.5	<1	8.0			120	0.06		11/23/2004	6	7.8			120	0.09	
11/30/2004	38.5	3	8.0	10.2	11	280	0.08		11/30/2004	8	7.7	8.6	12	280	0.09	
12/7/2004	38.5	4	8.0			340	0.10	0.87	12/7/2004	12	7.7			220	0.10	3.55
12/14/2004	36.3	7	7.9			4467	1.47		12/14/2004	16	7.7			2433	0.59	
12/21/2004	32.0	4	8.0			200	0.32		12/21/2004	10	7.7			<33	0.20	
12/28/2004	30.3	9	8.0			340	0.23		12/28/2004	13	7.9			300	0.09	
1/4/2005	26.0	8	8.0			TNTC	0.24	0.90	1/4/2005	12	7.8			TNTC	0.24	2.18
1/11/2005	25.5	8	8.0	9.6	12	700	0.11		1/11/2005	11	7.8	9.0	12.5	700	0.09	
1/18/2005	22.5	10	7.7			200	0.11		1/18/2005	11	7.4			167	0.31	
1/25/2005	21.5	9	8.0			400	0.22		1/25/2005	14	7.7			80	0.23	
2/1/2005	20.8	11	8.0			380	0.09	1.00	2/1/2005	13	7.6			220	0.39	3.75
2/8/2005	20.8	10	8.1			160	0.09		2/8/2005	13	7.7			280	0.13	
2/15/2005	20.0	21	8.1			300	0.07		2/15/2005	16	7.7			520	0.25	
2/22/2005	18.0	21	8.1			300	0.32		2/22/2005	12	7.8			67	0.22	
3/1/2005	17.0	17	8.1			260	0.39	0.59	3/1/2005	14	7.8			300	0.23	3.15
3/8/2005	15.0	17	8.1			1560	0.07		3/8/2005	15	7.8			1020	0.08	
3/15/2005	15.0	20	8.1	11.2	14	200	0.14		3/15/2005	22	7.8	9.9	15	67	0.09	

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
3/22/2005	15.5	14	8.0			260	0.11		3/22/2005	11	7.7			160	0.12	
3/29/2005	17.0	40	7.9			700	0.28		3/29/2005	28	7.6			500	0.23	
4/5/2005	14.0	18	8.0			367	0.30	0.62	4/5/2005	17	7.8			233	0.32	3.05
4/12/2005	18.0	22	7.9			367	0.13		4/12/2005	27	7.8			1267	0.14	
4/19/2005	22.0	17	7.9	8.9	11	320	0.10		4/19/2005	18	7.8	8.7	13	400	0.18	
4/26/2005	20.0	10	7.8			200	0.18		4/26/2005	9	7.6			120	0.13	
5/3/2005	7.5	2	7.8			260	0.83	0.38	5/3/2005	5	7.4			100	0.09	4.6
5/10/2005	19.0	11	7.8	8.7	13.5	600	0.39		5/10/2005	9	7.6	8.6	15.5	1000	0.16	
5/17/2005	19.0	12	7.8	9.2	16.5	3267	0.11		5/17/2005	12	7.7	8.7	17.5	2367	0.14	
5/24/2005	18.0	8	7.9			667	0.10		5/24/2005	7	7.7			333	0.06	
5/31/2005	15.5	5	7.9			740	0.08		5/31/2005	20	7.6			360	0.08	
6/7/2005	41.5	3	8.0			780	0.51	0.54	6/7/2005	4	7.7			660	0.19	2.50
6/14/2005	39.0	6	8.0	10.0	19	867	0.14		6/14/2005	6	7.7	9.6	20	500	0.07	
6/21/2005	50.3	18	7.9			580	0.10		6/21/2005	11	7.6			160	0.13	
6/28/2005	70.0	19	7.8	8.4	18	TNTC	0.19		6/28/2005	15	7.5	7.8	19.5	1320	0.07	
7/5/2005	41.0	3	7.9			767	0.12	0.50	7/5/2005	4	7.6			367	0.14	2.50
7/12/2005	70.0	4	7.8			900	0.11		7/12/2005	4	7.7			600	0.35	
7/19/2005	47.5	1	7.8	9.9	21	700	0.09		7/19/2005	4	7.7	8.9	22.5	380	0.15	
7/26/2005	58.3	1	7.8			433	0.06		7/26/2005	3	7.6			500	0.06	
8/2/2005	71.0	2	7.8			467	0.07	0.38	8/2/2005	2	7.7			300	0.07	2.85
8/9/2005	77.0	<1	7.8	8.9	21.5	600	0.09		8/9/2005	3	7.6	7.1	24	333	0.12	
8/16/2005	64.0	<1	7.8	8.8	20.5	233	0.06		8/16/2005	3	7.6	7.9	22	300	0.17	
8/23/2005	66.0	<1	7.8			733	0.10		8/23/2005	2	7.6			233	0.26	
8/30/2005	75.0	<1	7.8	9.6	18.5	300	0.12		8/30/2005	<1	7.8	8.2	20	300	0.18	
9/6/2005	77.0	<1	7.8			333	0.05	0.26	9/6/2005	3	7.6			233	0.13	2.30
9/13/2005	107.0	4	7.8			200	0.04		9/13/2005	4	7.6			160	0.28	
9/20/2005	109.0	3	7.8	8.4	16.5	200	0.30		9/20/2005	5	7.5	7.3	18.5	140	0.13	
9/27/2005	104.0	2	7.8	9.1	16.5	260	0.30		9/27/2005	4	7.6	8.4	18	300	0.30	
10/3/2005	86.0	2	7.8			880	0.07	0.24	10/3/2005	5	7.6			440	0.29	1.9
10/11/2005	67.0	<1	8.0			240	0.07		10/11/2005	4	7.8			140	0.05	
10/18/2005	62.0	<1	7.9	10.4	15	500	0.57		10/18/2005	4	7.7	8.4	17.5	133	0.20	
10/25/2005	57.8	2	7.9			100	0.04		10/25/2005	8	7.6			140	0.06	

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
11/1/2005	62.0	<1	8.0			100	0.08	0.22	11/1/2005	1	7.7			120	0.04	3.15
11/8/2005	61.0	<1	7.9			660	0.03		11/8/2005	<1	7.6			380	0.12	
11/15/2005	50.3	<1	8.0			40	0.26		11/15/2005	6	7.7			220	0.24	
11/22/2005	55.0	1	8.0			60	0.16		11/22/2005	10	7.8			100	0.13	
11/29/2005	53.3	<1	8.0	10.0	10.5	50	0.35		11/29/2005	4	7.7	9.2	12	60	0.52	
12/6/2005	50.3	<1	8.0			120	0.15	0.20	12/6/2005	5	7.6			40	0.14	2.45
12/13/2005	41.0	2	8.0			40	0.04		12/13/2005	8	7.7			100	0.08	
12/19/2005	44.0	<1	8.0			80	0.09		12/19/2005	7	7.6			80	0.09	
12/27/2005	59.0	4	7.9			60	0.36		12/27/2005	6	7.7			80	0.24	
1/3/2006	68.0	5	7.9			20	0.121		1/3/2006	10	7.7			120	0.12	
1/10/2006	62.0	8	8.0	8.3	11	20	0.08	0.24	1/10/2006	10	7.7	8.7	12	140	0.10	2.10
1/16/2006	56.0	4	8.0			40	0.08		1/16/2006	6	7.6				0.07	
1/24/2006	50.3	3	8.1			80	0.11		1/24/2006	33	7.6			60	0.24	
1/31/2006	41.0	11	8.0	10.0	10	260	0.17		1/31/2006	17	7.9	10.0	12	100	0.13	
2/7/2006	40.5	11	8.0	10.0	11	680	0.02	0.22	2/7/2006	21	7.6	8.9	13	460	0.07	1.60
2/14/2006	39.5	7	8.0	11.0	10.6	440	0.07		2/14/2006	20	7.7	9.1	12.5	280	0.12	
2/21/2006	37.7	13	8.0	10.9	10	260	0.04		2/21/2006	9	7.8	10.0	12	80	0.14	
2/28/2006	37.7	16	8.0			240	0.11		2/28/2006	12	7.7			140	0.06	
3/7/2006	34.0	8	8.0			120	0.07	0.19	3/7/2006	14	7.7			320	0.22	2.35
3/14/2006	32.0	13	7.9			120	0.06		3/14/2006	12	7.6			120	0.19	
3/21/2006	30.3	13	8.1	11.8	13	3200	0.08		3/21/2006	20	7.6	10.6	14	1180	0.14	
3/28/2006	27.0	14	7.9	12.0	15	60	0.08		3/28/2006	12	7.8	11.5	15	20	0.10	
4/4/2006	39.0	21	7.8			180	0.11	0.27	4/4/2006	16	7.4			440	0.10	3.50
4/11/2006	75.0	10	7.9	11.0	10	160	0.05		4/11/2006	8	7.6	10.0	12.0	40	0.05	
4/17/2006	63.0	14	7.9	11.6	12.5	140	0.05		4/17/2006	13	7.5	11.2	13.5	120	0.05	
4/25/2006	64.0	10	7.9	10.6	13.5	520	0.07		4/25/2006	8	7.6	10.0	15.0	420	0.16	
5/2/2006	36.3	6	7.9	11.0	15.0	520	0.04	0.188	5/2/2006	18	7.2	10	16.5	280	0.53	6.40
5/9/2006	61.0	10	7.8	11.0	15	760	0.05		5/9/2006	18	7.4	10.5	16.0	640	0.06	
5/16/2006	45.0	10	7.8	9.6	19	900	0.07		5/16/2006	9	7.5	9.8	20	660	0.05	
5/23/2006	72.0	18	7.8			2660	0.07		5/23/2006	15	7.6			1880	0.06	
5/30/2006	73.0	14	7.8			840	0.31		5/30/2006	11	7.6			960	0.23	
6/6/2006	51.5	11	7.8			1640	0.130	0.32	6/6/2006	12	7.6			1480	0.213	2.75

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
6/13/2006	69.0	12	7.9	10.4	17.5	1260	0.089		6/13/2006	10	7.6	8.8	19.0	780	0.114	
6/20/2006	85.0	7	7.8			400	0.05		6/20/2006	6	7.6			280	0.30	
6/27/2006	81.0	<1	7.7				0.11		6/27/2006	2	7.7				0.11	
7/4/2006	66.0	4	7.8			760	0.06		7/4/2006	5	7.8			800	0.09	
7/11/2006	51.5	5	7.7			620	0.07	0.39	7/11/2006	3	7.6			420	0.11	1.70
7/18/2006	53.3	2	7.8	12.0	20.5	920	0.06		7/18/2006	3	7.6	9.0	22.0	420	0.06	
7/25/2006	67.0	3	7.7			640	0.05		7/25/2006	3	7.6			340	0.09	
8/1/2006	82.0	3	7.7			280	0.07	0.31	8/1/2006	6	7.6			440	0.07	1.95
8/8/2006	93.0	7	7.7	9.2	20.0	340	0.24		8/8/2006	5	7.6	8.0	22.0	220	0.07	
8/15/2006	77.0	6	7.6	10.0	20.0	280	0.09		8/15/2006	4	7.5	8.5	21.5	140	0.06	
8/22/2006	100.0	6	7.6			280	0.18		8/22/2006	3	7.6			180	0.17	
8/29/2006	77.0	5	7.7			360	0.03		8/29/2006	5	7.6			360	0.04	
9/5/2006	70.0	3	7.9			440	0.10	0.25	9/5/2006	3	7.7			440	0.20	1.70
9/12/2006	21.5	3	7.7			220	0.06		9/12/2006	3	7.6			480	0.31	
9/19/2006	40.0	1	7.7			280	0.07		9/19/2006	3	7.6			260	0.07	
9/26/2006	40.0	1	7.8			100	0.04		9/26/2006	4	7.6			100	0.06	
10/3/2006	36.3	<1	7.8				0.08	0.16	10/3/2006	<1	7.6				0.22	238
10/10/2006	70.0	4	7.8	10.2	14.0	280	0.06		10/10/2006	5	7.6	9.6	16	280	0.05	
10/17/2006	58.3	1	8.0			460	0.19		10/17/2006	5	7.8			200	0.04	
10/24/2006	39.5	2	8.0			80	0.05		10/24/2006	6	7.8			200	0.05	
10/31/2006	37.0	1	8.0			80	0.21		10/31/2006	2	7.8			20	0.22	
11/7/2006	37.0	2	8.0			170	0.04	0.14	11/7/2006	6	7.7			100	0.07	2.55
11/14/2006	37.7	2	7.8			180	0.44		11/14/2006	8	7.6			100	0.27	
11/21/2006	35.0	<1	7.8			40	0.51		11/21/2006	9	7.6			40	0.48	
11/28/2006	31.0	8	8.0	9.0	11	140	0.04		11/28/2006	9	8.0	8.5	13	80	0.05	
12/5/2006	28.8	<1	7.8			60		0.14	12/5/2006	7	7.8			140		2.35
12/12/2006	30.3	<1	8.1			70	0.05		12/12/2006	5	7.8			50	0.06	
12/19/2006	28.8	4	8.2				0.05		12/19/2006	5	7.7				0.05	
12/26/2006	28.0	2	8.2			40	0.13		12/26/2006	6	7.9			20	0.05	
1/2/2007	26.0	5	7.9			100	0.04		1/2/2007	6	7.7			90	0.04	
1/9/2007	25.5	3	8.0	10.8	12.0	20	0.05	0.21	1/9/2007	10	7.7	9.2	13.5	90	0.04	3.00
1/16/2007	23.0	6	7.9			30	0.62		1/16/2007	10	7.7			150	0.18	

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
1/23/2007	23.5	7	7.8			60	0.05		1/23/2007	13	7.7			110	0.12	
1/30/2007	23.5	2	7.9	10.8	10.0	80	0.06		1/30/2007	9	7.6	9.8	12.0	40	0.08	
2/6/2007	23.0	3	7.8			30	0.14	0.13	2/6/2007	13	7.4			50	0.06	2.70
2/13/2007	24.0	4	7.9			70	0.03		2/13/2007	11	7.4			60	0.21	
2/20/2007	25.5	9	8.0			100	0.03		2/20/2007	7	7.6			60	0.21	
2/27/2007	24.0	2	7.9			120	0.08		2/27/2007	9	7.7			70	0.12	
3/6/2007	23.5	2	7.9			720	0.05	0.21	3/6/2007	13	7.6			320	0.05	3.70
3/13/2007	22.5	8	7.8			200	0.06		3/13/2007	14	7.5			130	0.06	
3/20/2007	23.5	4	8.0			1780	0.15		3/20/2007	10	7.7			1300	0.15	
3/27/2007	20.8	3	7.9			40	0.11		3/27/2007	8	7.6					
4/3/2007	24.0	14	7.9			100	0.12	0.50	4/3/2007	9	7.6			180	0.05	3.60
4/10/2007	87.0	14	7.8			180	0.12		4/10/2007	15	7.7			80	0.04	
4/17/2007	27.0	6	7.8			140	0.05		4/17/2007	8	7.7			140	0.06	
4/24/2007	30.0	8	8.1			220	0.09		4/24/2007	8	7.7			120	0.18	
5/1/2007	35.0	7	8.0			460	0.05	0.75	5/1/2007	5	7.8			280	0.08	2.50
5/8/2007	38.0	5	7.8	11	19	230	0.04		5/8/2007	6	7.6	10.4	19.0	160	0.06	
5/15/2007	54.0	6	7.9			460	0.06		5/15/2007	3	7.7			310	0.07	
5/22/2007	57.0	6	7.9			430	0.08		5/22/2007	5	7.6			340	0.07	
5/29/2007	49.0	4	7.9			580	0.05		5/29/2007	4	7.6			260	0.09	
6/5/2007	47.0	5	7.8			380	0.14	0.46	6/5/2007	5	7.5			360	0.14	3.00
6/12/2007	60.0	2	7.6			480	0.04		6/12/2007	4	7.5			440	0.07	
6/19/2007	47.0	3	7.7			1540	0.17		6/19/2007	8	7.7			180	0.20	
6/26/2007	37.0	16	7.6			260	0.34		6/26/2007	6	7.5			500	0.24	
7/3/2007	43.0	2	7.7			400	0.11		7/3/2007	3	7.4			260	0.11	
7/10/2007	41.0	4	7.6			600	0.04	0.68	7/10/2007	5	7.5			500	0.09	3.02
7/17/2007	9.0	1	7.7			160	0.04		7/17/2007	1	7.6			140	0.10	
7/24/2007	3.0	<1	7.5			80	0.03		7/24/2007	2	7.5			220	0.09	
7/31/2007	2.0	<1	7.5			340	0.04		7/31/2007	3	7.4			220	0.14	
8/7/2007		1	7.8			220	0.13	0.61	8/7/2007	2	7.5			180	0.09	2.70
8/14/2007		3	7.7			400	0.09		8/14/2007	3	7.6			380	0.08	
8/21/2007	36.0	<1	7.7			360	0.10		8/21/2007	<1	7.6			300	0.09	
8/28/2007	66.0	2	7.8			460	0.03		8/28/2007	2	7.6			180	0.12	

Date	Q (cfs)	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)	Date	TSS (mg/L)	pH	DO (mg/L)	WT (*C)	FC (cfu/100 mL)	Amm Dis. N (mg/L)	TP (mg/L)
9/4/2007	50.0	5	7.8			1420	0.23		9/4/2007	3	7.7			860	0.15	
9/11/2007	39.0	2	7.8			160	0.34	0.50	9/11/2007	4	7.6			200	0.14	2.90
9/18/2007	41.0	<1	7.7			100	0.03		9/18/2007	3	7.6			100	0.07	
9/25/2007	49.0	1	7.7			190	0.09		9/25/2007	2	7.7			160	0.04	
10/2/2007	57.0	3	7.8			360	0.03	0.68	10/2/2007	3	7.5			160	0.08	2.80
10/9/2007	48.0	1	7.6			240	0.02		10/9/2007	4	7.4			180	0.03	
10/16/2007	46.0	<1	7.7			280	0.06		10/16/2007	3	7.5			230	0.06	
10/23/2007	39.0	10	7.8			90	0.08		10/23/2007	3	7.5			60	0.10	
10/30/2007	36.0	2	7.9	8.6	16	320	0.03		10/30/2007	3	7.5	8.7	17	90	0.05	
11/6/2007		7.7			110	0.08	11.6	<5	11/6/2007	3	7.5			160	0.10	
11/13/2007		7.9			250	0.10			11/13/2007	4	7.5			660	0.07	3.30
11/20/2007		7.9	8.1	12.5	110	0.08			11/20/2007	5	7.6	6.4	14.5	330	0.07	
12/27/2007		7.8			210	0.11			12/27/2007	4	7.5			100	0.28	
12/4/2007		8.0	11.0	14	50	0.07	11.6	<5	12/4/2007	13	7.6	8.5	15	60	0.06	
12/11/2007		7.9			80	0.05			12/11/2007	21	7.6			110	0.07	3.05
12/18/2007		8.0			100	0.14			12/18/2007	12	7.6			80	0.07	
12/26/2007		8.0			80	0.03			12/26/2007	18	7.6			60	0.05	

Q = discharge; cfs = cubic feet per second; TSS = Total Suspended Sediment; mg/L = milligrams per liter; DO = Dissolved Oxygen; WT = Water Temperature; *C = degrees Celsius; FC = Fecal Coliform; cfu = colony-forming units; Amm Dis. = Dissolved Ammonia; TP = Total Phosphorus; TNTC = too numerous to count

Table C- 4. Reported results of data collected by the Bureau of Reclamation from locations in the Lower Boise River subbasin between 1999 and 2008.

Bureau of Reclamation													
Site ID	**Date**	**Q (cfs)**	**pH**	**WT (*C)**	**DO (mg/L)**	**SpC (uS/cm^3)**	**Turbidity (NTU)**	***E. coli* (cfu/100 mL)**	**TSS (mg/ L)**	**P (mg/ L)**	**OP Dis. (mg/ L)**	**Amm (mg/L)**	**Nitrate/ Nitrite Dis. (mg/L)**
Indian Creek at Reservoir Inlet													
BOI142	2/23/1999	0	7.6	5.3	12	88	6	*Non-detect	14	0.025	0.014	0.02	0.2
BOI142	3/15/1999	880	7.8	4.2	11.2	90	3	*Non-detect	2	0.012	0.007	*Non-detect	0.16
BOI142	5/17/1999	880	7.6	5.7	10.8	84	10	62	12	0.051	0.019	*Non-detect	0.24
BOI142	6/15/1999		7.5	9.1	10.8	54	6	28	6	0.032	0.016	0.01	0.13
BOI142	7/12/1999		7.8	14.9	9.9	69	3	38	8	0.026	0.015	0.01	0.13
BOI142	8/17/1999		7.9	15.9	7	70	2	14	4	0.015	0.01	0.01	0.14
BOI142	9/21/1999		8.0	16.8	10	76	2	2		0.022	0.011	*Non-detect	0.15
Indian Creek above New York Canal													
BOI140	2/23/1999	738	7.25	4.2	12.1	87	5	*Non-detect	0.031	0.022	*Non-detect		0.11
BOI140	3/15/1999	880	7.25	4	10.8	89	3	*Non-detect	1	0.016	0.007	*Non-detect	0.18
BOI140	4/6/1999	880	7.6	5.5	10.2	83	9	26	9	0.049	0.02	0.01	0.24
BOI140	5/17/1999	612	7.83	8.4	10.4	63	5	8	4	0.028	0.012	0.01	0.11
BOI140	6/15/1999		7.5	11.1	10.8	49	6	6	6	0.025	0.012	0.01	0.1
BOI140	7/12/1999		7.5	13.1	9.8	56	2	16	2	0.017	0.008	0.02	0.05
BOI140	8/17/1999		7.8	15	7.9	60	2	6	2	0.011	0.007	0.01	0.07
BOI140	9/21/1999		7.5	16.9	10.7	66	2	*Non-detect	4	0.036	0.008	*Non-detect	0.07

Site ID	Date	Q (cfs)	pH	WT (*C)	DO (mg/L)	SpC (uS/cm^3)	Turbidity (NTU)	*E. coli* (cfu/100 mL)	TSS (mg/ L)	P (mg/ L)	OP Dis. (mg/ L)	Amm (mg/L)	Nitrate/ Nitrite Dis. (mg/L)
Ninemile Creek near mouth													
BOI320	3/5/2000	7		11.5		430	20		115	0.26	0.137	0.15	2.74
Boise River at Eckert Road													
BOI125	4/19/2001		7.63	6.5	13.4	94	3						
BOI125	5/10/2001		7.7	7.1	12.6	85	2						
BOI125	6/28/2001		7.45	12.1	8.7	73	1						
BOI125	7/20/2001		7.47	14.4	9.6	73	2						
BOI125	8/16/2001		7.62	18.2	9.2	73	2		2				
BOI125	9/14/2001		7.89	18.2	8	82	4		6				
BOI125	10/30/2001		7.9	12.1	9.8	93	4		4				
BOI125	11/29/2001		7.9	4.9	11.7	89	4		3				
BOI125	12/20/2001		7.46	5.3	10.4		3		2				
BOI125	1/28/2002		8.19	2.1	12.4	91	4		1				
BOI125	2/27/2002		7.85	2.4	12.5	95	3		2				
BOI125	3/21/2002		8.21	5.9	12.5	98	3		2				
BOI125	4/30/2002		7.3	6.4	12		5		4				
BOI125	5/31/2002		8.04	10.9	11.5	66	4		3				
BOI125	6/28/2002		8.01	12.6	10.5	54	3		2				
BOI125	7/30/2002		7.67	15.6	8.5	62	1		1				
BOI125	8/30/2002		7.92	17.5	9.3	71	2		4				
BOI125	9/30/2002		7.81	15	8.9	74	3		2				
BOI125	10/29/2002	300	7.49	9.1	9.9	92	6		2				
BOI125	11/29/2002		7.51	5.4	11.3	93	5		4				
BOI125	11/29/2002						5		4				
BOI125	12/26/2002		7.08	2.8	11.3	58	3		3				
BOI125	1/28/2003		8.02	4.2	10	66	2		2				
BOI125	2/26/2003		8.03	2.9	11.4	88	2		3				
BOI125	3/19/2003		8.05	4.6	10.9	90	2		5				
BOI125	4/18/2003		8.29	7.3	12.4	86	5		5				
BOI125	5/31/2003		7.77	8.6	10.1	69	2		1				

Site ID	Date	Q (cfs)	pH	WT (*C)	DO (mg/L)	SpC (uS/cm^3)	Turbidity (NTU)	*E. coli* (cfu/100 mL)	TSS (mg/ L)	P (mg/ L)	OP Dis. (mg/ L)	Amm (mg/L)	Nitrate/Nit rite Dis. (mg/L)
BOI125	6/30/2003		8.46	13.7	9.7	49	4		5				
BOI125	7/7/2003		7.86	12.4	9.5	47	4		7				
BOI125	7/18/2003		6.96	21.3	8.7	73	1		3				
BOI125	7/24/2003		8.08	14.4	9.8	46	2		3				
BOI125	7/28/2003		7.65	14.8	9.1	47	2		2				
BOI125	8/4/2003		7.45	15.3	8.6	54	2		3				
BOI125	8/14/2003		7.7	16.8	9.1	64	1		2				
BOI125	8/22/2003		8.37	18.7	9.6	69	1		< 1				
BOI125	8/28/2003		7.67	17.4	8	71	2		3				
BOI125	9/5/2003		7.64	18.9	9.1	75	12		14				
BOI125	9/11/2003		8	14.2	9.4	74	5		8				
BOI125	9/18/2003		8.06	17.5	9.8	75	7		8				
BOI125	9/25/2003		8.11	16.8	10	76	8		10				
BOI125	9/30/2003		7.73	15.4	9.5	77	2		4				
BOI125	10/9/2003		7.6	16.3	7.7	82	10		15-verifi-ed by rerun				
BOI125	10/14/2003		7.49	12.8	8.2	80	10		18				
BOI125	10/22/2003		7.51	12.5	10	85	8		15				
BOI125	10/31/2003		7.86	9.2	10.7	85	9		10				
BOI125	11/6/2003		7.71	6.7	10.8	84	7		11				
BOI125	11/13/2003		7.75	5.9	12.8	86	8		13				
BOI125	11/21/2003		7.94	5.5	12	84	7		5				
BOI125	11/25/2003		7.99	5	12.3	84	5		5				
BOI125	12/5/2003		8.16	7.2	12.5	83	4		5				
BOI125	12/11/2003		7.9	5.5	12	83	4		6				
BOI125	12/24/2003		7.74	4.3	12	83	4		4				
BOI125	12/31/2003		7.54	2.6	12.8	82	5		3				
BOI125	1/9/2004		7.87	3	12.5	85	4		6				
BOI125	1/9/2004						4		5				

Site ID	Date	Q (cfs)	pH	WT (*C)	DO (mg/L)	SpC (uS/cm^3)	Turbidity (NTU)	*E. coli* (cfu/100 mL)	TSS (mg/ L)	P (mg/ L)	OP Dis. (mg/ L)	Amm (mg/L)	Nitrate/Nit rite Dis. (mg/L)
BOI125	1/15/2004		7.81	1.2	13.3	85	7		6				
BOI125	1/23/2004		7.85	1.7	14.7	85	4		4				
BOI125	1/23/2004						4		4				
BOI125	1/29/2004		7.74	2.3	12.4	85	6		6				
BOI125	2/5/2004		7.94	2.6	12.7	87	3		5				
BOI125	2/12/2004		7.95	1	13.1	88	3		4				
BOI125	2/19/2004		8.03	2.8	12.6	88	4		6				
BOI125	3/29/2004		7.62	6.2	12.9	91	3		5-confirmed by rerun				
BOI125	4/23/2004		8.08	8.7	12.1	84	5		6				
BOI125	5/27/2004		7.62	9.9	10.3	64	2		3				
BOI125	7/10/2004		7.38	12.9	8	93	2		2				
BOI125	8/12/2004		7.87	17.6	9	67	2		2				
BOI125	9/17/2004		8.21	17.8	8.4	75	3		3				
Boise River below Lucky Peak Dam													
BOI101	10/29/2002						7		4				
Boise River at Glenwood Bridge													
BOI106	2/14/2006							< 4	6				
BOI106	2/14/2006							< 2					
Boise River at Star Bridge													
BOI110	2/15/2006							< 10	8				

Boise River near Parma at County Bridge													
Site ID	Date	Q (cfs)	pH	WT (*C)	DO (mg/L)	SpC (uS/cm3)	Turbidity (NTU)	E. coli (cfu/100 mL)	TSS (mg/L)	P (mg/L)	OP Dis. (mg/L)	Amm (mg/L)	Nitrate/Nitrite Dis. (mg/L)
BOI133	2/15/2006							70	22				

Q = discharge; cfs = cubic feet per second; WT = Water Temperature; *C = degrees Celsius; DO = Dissolved Oxygen; mg/L = milligrams per liter; SpC = Specific Conductance; uS/cm^3 = microSiemens per cubic centimeter; NTU = Nephelometric Turbidity Unit; cfu = colony-forming units; TSS = Total Suspended Sediment; P = Total Phosphorus; OP Dis. = Dissolved Ortho-Phosphorus; Amm = Ammonia; Nitrate/Nitrite Dis. = Dissolved Nitrate/Nitrate

Table C-5. Data collected by DEQ from locations in the Lower Boise River subbasin in 2008.

DEQ 2008 Data Collection Reported Results												
Date	**Time**	**Q (cfs)**	**AT (*C)**	**WT (*C)**	**DO (mg/L)**	**pH**	**SpC (uS/cm^3)**	***E. coli* (cfu/100mL)**	**Amm Dis. (N mg/L)**	**OP Dis. (mg/L)**	**TP (mg/L)**	**SSC (mg/L)**
Thurman Drain AU 005_06												
5/13/08	8:30	8.3		14.1	8.25	7.78	215	9.7	0.061	0.043	0.119	22
6/24/08	8:45	4.2	18.7	20.75		7.55	304	101.2	0.06	0.0561	0.0487	7.3
7/30/08	9:30	21e	18.9	21.58	9.97	7.22	234	111	0.072	0.0207	0.049	4.9
9/4/08	8:45	17.3e	18.9	27.7		6.27	263	16.1	0.16	0.051	0.11	6.2
10/21/08	9:25	5.6	5.56	12.93	10.33	7.98	289	2	0.009	0.022	0.08	6.1
W. Hartley Drain AU 005_06												
6/24/08	12:35	15e	20.14	17.21		6.89	185	551	0.009	0.284	0.285	38
7/30/08	12:15	10e	23.9	19.68	8.15	7.48	144	670	0.009	0.162	0.2	15
9/4/08	11:00	road	closed									
10/21/08	12:05	5.09e	10	13.22	8.19	9.42	427	20.3	0.01	0.40	0.44	18
E. Hartley Drain AU 005_06												
6/24/08	10:50	26e	24.1	16.3		6.79	262	774.6	0.077	0.286	0.396	160
7/30/08	11:00	19e	23.9	16.58	9.89	7.48	348	247	0.049	0.243	1	1200
9/4/08	10:30	9.6e							0.03	0.58	0.69	7.9
10/21/08	11:20	11.01e	10	12.92	7.76	8.54	628	36.4	0.01	0.27	0.30	9.9
Sand Hollow, Oasis Rd AU 017_02												
5/13/08	11:45	2.4		11.5	10.34	7.49	47	13.4	0.009	0.016	0.057	9
6/24/08	13:30	0.6e		18.38		6.16	70	298.3	0.039	0.646	0.706	5.3
7/30/08	13:20	0.45e	25	21.54	10.09	5.42	117	118	0.009	0.015	0.026	4.9
9/4/08	11:50	.25e						387.3	0.01	0.01	0.02	4.9
10/21/08	14:00	dry										
Sand Hollow, Market Rd AU 017_03												
5/13/08	13:25			12.47	9.34	8.17	180	369.2	0.2	0.17	0.495	300
6/24/08	14:30	17e		19.61		7.83	324	209.8	0.04	0.186	0.17	24

Date	Time	Q (cfs)	AT (*C)	WT (*C)	DO (mg/L)	pH	SpC (uS/cm^3)	*E. coli* (cfu/100mL)	Amm Dis. (N mg/L)	OP Dis. (mg/L)	TP (mg/L)	SSC (mg/L)
7/30/08	14:30	45e	26.1	19.36	9.09	7.16	245	1014	0.047	0.166	0.36	460
9/4/08	13:00	24e						410.6	0.01	0.20	0.28	76
10/21/08	14:15	9.89		12.36	8.56		610	129.1	0.01	0.23	0.27	53
Indian Creek, Kings Rd AU 003a_04												
5/13/08	14:30	10.3		13.77	11.01	8.18	372	142.1	0.028	0.77	0.892	7
6/24/08	15:30	22e		17.26		7.85	502	242	0.067	1.07	1.04	4.9
7/30/08	16:00	15e	28.9	17.9	8.31	6.91	405	461	0.009	0.607	0.69	5
9/4/08	14:30	13.09e						378.4	0.01	0.28	0.29	4.9
10/22/08	8:05	37.91	1.7	10.79	8.29		505	290.9	0.01	0.82	0.84	4.9

Q = discharge; cfs = cubic feet per second; AT = Air Temperature; *C = degrees Celsius; WT = Water Temperature; DO = Dissolved Oxygen; mg/L = milligrams per liter; SpC = Specific Conductance; uS/cm$^{3=}$ microSiemens per cubic centimeter; cfu = colony-forming units; Amm. Dis. = Dissolved Ammonia; OP Dis. = Dissolved Ortho-Phosphorus; TP= Total Phosphorus; SSC - Suspended Sediment Concentration; e = Estimated

Table C-6. Aquatic life data collected by DEQ from Lower Boise River subbasin locations between 2003 and 2008.

Assessment Unit	003a_04	
BURP ID	2003SBOIA051	
Location	Indian Creek at Robinson Road	
Macroinvertebrates		
Date Measured: 2003-10-14		
Name	Taxon Code	Count
Coenagrionidae	6	4
Baetis tricaudatus	20	2
Tricorythodes sp.	57	1
Simulium sp.	303	1
Cryptochironomus sp.	340	1
Paratendipes sp.	380	1
Potthastia longimana gr.	389	1
Turbellaria	416	29
Nematoda	417	16
Physa (Physella) sp.	434	1
Ostracoda	442	11
Sphaeriidae	567	5
Potamopyrgus antipodarum	810	389
Enchytraeidae	935	1
Crangonyx sp.	989	1
Eukiefferiella coerulescens gr.	1005	1
Limnodrilus hoffmeisteri	1067	38
Rhyacodrilus sp.	1135	1
Fish		
Name	Count	
redside shiner	21	
sculpin	1	

Assessment Unit	006_02	
BURP ID	2003SBOIA050	
Location	Mason Creek at Lakeview Park	
Macroinvertebrates		
Date Measured: 2003-10-15		
Name	**Taxon Code**	**Count**
Baetis tricaudatus	20	1
Cricotopus sp.	333	1
Pentaneura sp.	384	1
Polypedilum sp.	386	2
Turbellaria	416	50
Nematoda	417	1
Ostracoda	442	2
Sphaeriidae	567	2
Potamopyrgus antipodarum	810	400
Enchytraeidae	935	2
Coenagrion/Enallagma sp.	969	4
Crangonyx sp.	989	2
Limnodrilus hoffmeisteri	1067	29
Nais variabilis	1115	2
Rhyacodrilus sp.	1135	17
Fish		
Name	**Count**	
northern squawfish	2	
redside shiner	12	
smallmouth bass	1	
sucker	6	

Assessment Unit	010_03	
BURP ID	2003SBOIA052	
Location	Fivemile Creek at Meridian Road	
Macroinvertebrates		
Date Measured: 2003-10-14		
Name	**Taxon Code**	**Count**
Baetis tricaudatus	20	4
Tricorythodes sp.	57	3
Simulium sp.	303	6
Cricotopus bicinctus gr.	334	1
Cricotopus trifascia gr.	339	9
Eukiefferiella claripennis gr.	348	16
Orthocladius (Euorthocladius) sp.	371	1
Turbellaria	416	86
Nematoda	417	37
Gyraulus sp.	431	1
Pisidium sp.	435	98
Ostracoda	442	12
Acari	453	9
Potamopyrgus antipodarum	810	249
Limnodrilus hoffmeisteri	1067	8
Rhyacodrilus sp.	1135	2
Prostoma sp.	1233	7
Fish		
Name		**Count**
northern squawfish		1
redside shiner		43
dace		16
sucker		3

Table C-7. Fish community data collected by the USGS from Lower Boise River subbasin locations between 2003 and 2008.

Station Name	Site ID	Date	% COLD	% COOL	% WARM	% Salmonids	Count	Number of Species
Lower Boise River below Eckert Road	4333571160800	11/17/2003	20	80	0	20	854	11
Lower Boise River above Lander Street WWTP	4336571161321	11/18/2003	53	47		47	524	11
Lower Boise River below Lander Street WWTP	4338281161459	11/18/2003	61.3	38.4	0.3	61.3	284	13
Boise River at Glenwood Bridge	13209500	8/18/2004	24.8	74.1	1.1	24.8	173	10
Lower Boise River above West Boise WWTP	4340121161823	11/19/2003	99	0.9	0.1	89	384	11
Lower Boise River below West Boise WWTP	4340301162020	11/19/2003	83.5	15.5	1	83.5	291	8

WWTP = wastewater treatment plant

Table C-8. Sediment load analysis of TMDL control locations for February and May 2008.

Sediment Load Analysis						
Location	Date	Q (cfs)	Constituent	Concentration (mg/L)	Coefficient	Result (tons/day)
Lander	May-08	20	TSS	0.8	0.0027	0.0432
Meridian	May-08	4.9	TSS	2	0.0027	0.0265
Boise West	May-08	3	TSS	5.4	0.0027	0.0437
Middleton	May-08	0.428	TSS	37	0.0027	0.0428
Nampa	May-08	10.29	TSS	6	0.0027	0.1667
Caldwell	May-08	5.18	TSS	8	0.0027	0.1119
Star	May-08	0.633	TSS	7	0.0027	0.0120
Notus	Feb-08	0.546	TSS	36	0.0027	0.0531

Q = discharge; cfs = cubic feet per second; mg/L = milligrams per liter; TSS = total suspended solids

Table C-9. Daily maximum and average water temperature, in degrees Celsius, recorded by the City of Boise between 2003 and 2008.

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
01/01/03	6.23	5.88	5.48	5.06	6.72	5.89	5.60	4.87	4.79	4.12	4.88	3.96	4.85	4.57
01/02/03	6.54	6.22	5.79	5.35	7.03	6.32	5.76	5.27	4.94	4.40	4.73	4.16	4.69	4.52
01/03/03	7.78	6.99	7.35	6.27	8.12	7.06	7.16	6.12	6.19	5.29	5.97	5.00	5.01	4.65
01/04/03	7.94	7.56	7.19	6.61	8.12	7.31	7.00	6.25	5.88	5.37	5.51	5.03	4.85	4.62
01/05/03	7.63	7.13	6.57	5.98	7.50	6.71	6.38	5.66	5.41	4.84	5.35	4.53	4.85	4.54
01/06/03	6.54	6.00	5.79	4.90	6.72	5.85	5.60	4.73	4.63	3.86	4.57	3.71	4.69	4.40
01/07/03	5.61	5.16	5.17	4.22	6.10	5.29	4.98	4.19	4.16	3.32	4.26	3.31	4.69	4.28
01/08/03	4.98	4.71	4.08	3.69	5.47	4.88	4.51	3.78	3.69	2.92	3.95	3.07	4.54	4.21
01/09/03	4.83	4.73	4.08	3.77	5.47	4.96	4.67	4.05	3.84	3.22	3.95	3.32	4.38	4.10
01/10/03	5.29	5.04	4.70	4.04	6.10	5.34	5.13	4.37	4.16	3.49	3.95	3.46	4.22	4.11
01/11/03	6.08	5.64	5.48	4.76	6.88	5.83	5.76	4.83	4.79	4.01	4.57	3.81	4.38	4.14
01/12/03	6.86	6.29	6.10	5.44	7.50	6.32	6.07	5.17	5.26	4.34	4.73	4.16	4.38	4.17
01/13/03	8.40	7.56	7.81	6.89	8.42	7.60	7.46	6.50	6.66	5.67	6.13	5.23	4.54	4.29
01/14/03	8.86	8.60	7.96	7.63	8.42	8.03	7.31	7.00	6.51	6.11	5.82	5.51	4.38	4.26
01/15/03	8.24	7.52	7.04	6.23	7.81	6.82	6.69	5.71	5.57	4.85	5.35	4.46	4.69	4.23
01/16/03	7.01	6.59	6.10	5.35	6.88	6.15	5.76	4.97	4.94	4.09	4.73	3.84	4.38	4.11
01/17/03	6.54	6.14	5.94	5.19	6.88	6.20	5.76	5.00	4.94	4.10	4.88	3.91	4.38	4.08
01/18/03	6.23	6.16	5.32	5.23	6.72	6.15	5.60	4.95	4.47	4.04	4.11	3.88	4.07	4.04
01/19/03	6.23	6.10	5.79	5.17	7.03	6.06	5.60	4.83	4.79	4.03	4.73	3.76	4.38	4.03
01/20/03	6.54	6.28	5.48	5.25	6.57	6.05	5.44	4.82	4.16	3.92	3.95	3.74	4.07	3.94
01/21/03	6.39	6.21	5.01	4.90	6.41	5.84	5.13	4.60	4.01	3.69	3.95	3.51	4.22	3.95
01/22/03	6.23	6.03	5.32	4.88	6.41	5.83	5.13	4.66	4.16	3.82	3.95	3.69	4.07	3.91
01/23/03	7.78	6.70	6.87	5.60	7.65	6.58	6.84	5.64	6.19	4.89	5.97	4.56	4.54	4.07
01/24/03	7.63	7.26	6.87	6.24	7.65	6.87	6.69	5.82	5.88	4.94	5.35	4.55	4.54	4.01
01/25/03	8.40	8.03	7.64	7.04	8.58	7.67	7.31	6.46	6.19	5.53	5.51	4.99	4.22	4.07
01/26/03	9.17	8.73	8.57	7.93	9.04	8.16	7.62	6.85	6.66	5.96	5.97	5.47	4.38	4.16
01/27/03	9.64	9.32	8.72	8.28	8.88	8.41	7.77	7.35	7.13	6.54	5.82	5.59	4.22	4.15
01/28/03	8.86	7.94	7.80	7.02	7.96	7.30	6.84	6.10	6.03	5.19	5.51	4.55	4.54	4.09
01/29/03	8.09	7.60	7.18	6.47	7.81	6.83	6.53	5.56	5.72	4.66	5.19	4.32	4.38	4.04
01/30/03	8.86	8.33	7.96	7.36	8.42	7.78	7.31	6.62	6.35	5.71	5.51	5.10	4.38	4.15
01/31/03	9.79	9.21	9.18	8.35	9.35	8.51	7.93	7.27	7.13	6.35	6.59	5.73	4.69	4.33

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
02/01/03	9.79	9.36	8.88	8.13	9.04	8.30	7.93	7.18	6.82	6.31	5.97	5.62	4.38	4.21
02/02/03	8.09	7.22	7.18	6.14	7.65	6.48	6.07	5.18	5.41	4.38	5.04	3.84	4.54	4.14
02/03/03	7.63	7.05	6.41	5.59	7.03	6.28	5.76	4.81	4.79	3.88	4.73	3.68	4.22	4.01
02/04/03	7.48	6.76	6.72	5.55	7.50	6.47	6.07	4.98	4.79	4.05	5.04	3.79	4.38	4.02
02/05/03	6.23	5.71	5.79	4.56	6.26	5.47	5.13	4.05	4.16	3.20	4.11	3.08	4.07	3.96
02/06/03	5.92	5.15	4.86	3.88	6.11	5.04	4.67	3.66	4.32	2.89	4.42	2.91	4.07	3.79
02/07/03	5.92	4.95	5.17	3.76	6.26	5.03	5.13	3.75	4.32	2.95	4.42	2.94	4.07	3.70
02/08/03	5.92	5.06	5.17	3.97	6.57	5.13	4.98	3.81	4.16	3.03	4.26	2.98	3.91	3.67
02/09/03	6.39	5.31	5.63	4.06	6.57	5.16	5.29	3.88	4.47	3.10	4.57	3.03	3.91	3.57
02/10/03	7.17	5.92	6.41	4.75	7.19	5.80	6.07	4.58	5.26	3.83	5.19	3.59	3.91	3.57
02/11/03	7.17	6.11	6.56	4.92	7.19	5.89	6.07	4.62	5.41	3.84	5.19	3.60	3.91	3.54
02/12/03	7.48	6.36	6.72	5.24	7.34	6.08	6.38	4.91	5.57	4.08	5.35	3.88	3.91	3.55
02/13/03	7.32	6.98	6.41	5.89	7.19	6.64	5.91	5.35	4.94	4.43	4.57	4.18	3.75	3.54
02/14/03	9.33	8.19	8.42	6.98	8.57	7.26	7.00	6.02	6.19	5.16	5.97	4.73	3.91	3.66
02/15/03	9.17	8.50	8.11	6.93	8.42	7.13	7.16	5.88	6.35	5.03	5.97	4.66	3.91	3.64
02/16/03	8.71	8.36	7.96	7.30	8.42	7.70	7.16	6.42	6.03	5.57	5.35	4.92	3.91	3.73
02/17/03	8.56	7.95	8.42	7.13	9.03	7.47	7.16	6.08	6.19	5.24	6.44	4.73	3.91	3.68
02/18/03	9.02	8.02	7.33	6.62	7.81	7.04	6.69	5.71	5.72	4.84	5.35	4.29	3.91	3.67
02/19/03	7.78	7.11	7.03	5.89	7.50	6.41	6.38	5.11	5.57	4.24	5.04	3.80	3.91	3.63
02/20/03	8.86	7.91	7.64	6.61	7.81	7.05	6.53	5.70	5.57	4.74	5.19	4.28	3.75	3.65
02/21/03	9.79	8.83	8.42	7.38	8.27	7.55	7.16	6.29	6.35	5.38	5.51	4.76	3.91	3.70
02/22/03	9.02	8.48	8.26	7.07	8.27	7.26	6.53	5.96	6.03	5.10	5.82	4.62	4.07	3.70
02/23/03	8.24	7.42	7.03	5.81	7.81	6.34	6.53	5.07	5.57	4.23	5.19	3.80	4.07	3.71
02/24/03	6.54	5.65	6.10	4.51	6.73	5.40	5.60	4.17	4.94	3.36	4.88	3.22	4.07	3.68
02/25/03	6.86	5.35	6.10	4.24	7.03	5.36	5.76	4.10	5.26	3.34	5.04	3.23	3.91	3.51
02/26/03	6.86	5.65	6.41	4.62	7.34	5.72	6.22	4.49	5.72	3.75	5.35	3.52	3.91	3.46
02/27/03	7.48	6.27	7.03	5.34	7.65	6.25	6.53	4.94	5.72	4.12	5.35	3.79	3.91	3.47
02/28/03	6.86	6.13	6.10	5.05	6.73	5.85	5.44	4.47	4.63	3.62	4.42	3.37	3.75	3.52
03/01/03	8.40	6.95	7.80	5.95			7.00	5.21	6.03	4.40	5.82	4.04	4.07	3.67
03/02/03	8.71	7.34	8.11	6.20			7.31	5.41	6.51	4.64	6.13	4.24	3.91	3.55
03/03/03	9.48	8.42	8.11	7.00	8.42	7.80	7.31	6.23	6.82	5.34	5.82	4.68	3.91	3.61
03/04/03	8.56	7.92	7.49	6.38	7.96	7.04	6.69	5.80	6.19	4.80	5.82	4.37	3.75	3.54
03/05/03	8.24	7.49	7.03	6.15	7.50	6.93	6.38	5.65	5.41	4.50	4.88	4.02	3.75	3.53

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
03/06/03	8.56	7.73	7.80	6.70	8.73	7.64	7.93	6.54	6.82	5.45	6.44	4.79	4.07	3.70
03/07/03	9.02	8.25	8.42	7.47	8.73	7.89	7.31	6.47	6.03	5.40	5.04	4.71	3.91	3.75
03/08/03	9.17	8.54	8.11	7.38	8.58	7.16	7.46	6.10	6.82	5.37	6.13	4.80	6.26	5.03
03/09/03	9.17	8.57	8.42	7.40	9.97	8.39	9.01	7.18	7.44	5.99	6.75	5.44	5.95	4.53
03/10/03	11.34	9.82	11.36	9.30	10.59	9.23	9.63	8.06	8.67	7.08	7.52	6.07	4.54	4.10
03/11/03	12.28	11.04	11.51	9.94	11.21	9.67	10.25	8.44	9.29	7.41	7.98	6.41	4.69	4.18
03/12/03	13.67	12.19	11.20	10.04	12.45	10.78	11.49	9.46	10.69	8.43	9.37	7.29	5.17	4.42
03/13/03	12.74	12.11			11.36	10.65	10.41	9.33	9.14	8.31	7.52	7.30	4.69	4.48
03/14/03	13.52	12.34	12.43	11.41	11.98	10.55	10.25	9.11	9.29	8.07	8.44	6.90	5.17	4.49
03/15/03	12.59	11.45	10.89	10.25	10.75	9.88	9.48	8.54	8.52	7.57	7.37	6.60	5.01	4.57
03/16/03	12.90	11.16	12.28	10.14	12.14	9.99	11.03	8.92	10.38	8.05	9.21	7.03	5.32	4.69
03/17/03	12.43	10.96	11.97	10.00	11.67	9.77	10.56	8.57	10.07	7.67	8.91	6.78	5.79	4.82
03/18/03	11.34	9.86	11.20	9.14	10.91	9.11	10.25	8.09	9.92	7.29	8.91	6.69	5.63	4.72
03/19/03	12.43	10.30	11.97	9.46	11.52	9.46	10.87	8.36	10.38	7.49	9.06	6.67	5.79	4.81
03/20/03	12.90	11.26	11.82	10.13	11.36	9.92	10.56	8.71	9.92	7.72	8.60	6.86	5.79	4.97
03/21/03	12.12	11.19	11.36	9.90	10.91	9.78	9.94	8.41	9.29	7.42	7.68	6.59	5.17	4.82
03/22/03	11.50	11.19	10.58	10.06	10.44	9.88	9.17	8.51	8.21	7.56	7.22	6.86	5.17	5.10
03/23/03	12.43	10.96	12.28	10.19	12.45	10.17	11.03	9.03	9.92	8.11	9.83	7.31	5.63	5.16
03/24/03	12.90	10.89	11.97	9.91	11.83	9.72	11.18	8.85	10.38	8.08	9.83	7.26	5.63	5.04
03/25/03	11.50	10.47	9.96	9.31	10.13	9.66	9.79	8.46	8.67	7.39	6.91	6.43	5.17	5.09
03/26/03	11.34	10.27	10.74	9.42	10.75	9.54	9.48	8.32	8.37	7.34	7.83	6.35	5.48	5.20
03/27/03	11.04	9.65	10.89	8.85	10.91	8.82	9.63	7.69	8.52	6.70	8.14	6.12	5.32	5.11
03/28/03	12.12	9.82	11.51	9.12	10.91	8.75	10.41	8.00	10.23	7.19	9.83	6.68	5.48	5.15
03/29/03	12.90	10.82	12.28	9.89	11.83	9.75	11.49	9.04	11.31	8.22	10.61	7.50	5.63	5.34
03/30/03	13.98	11.92	13.67	11.23	12.76	10.92	12.42	10.14	12.40	9.27	11.22	8.34	5.95	5.56
03/31/03	14.76	13.22	14.29	12.63	13.23	12.10	12.57	11.18	12.09	10.15	11.22	9.11	6.11	5.84
04/01/03	14.13	13.30	13.36	12.34	12.61	11.71	12.27	10.68	11.16	9.50	9.06	8.26	5.63	5.61
04/02/03	12.90	11.43	11.51	10.44	10.91	10.19	9.94	9.04	8.52	7.77	7.83	6.75	5.79	5.68
04/03/03	10.42	9.65	9.96	8.85	9.66	8.62	8.54	7.42	7.44	6.35	6.75	5.73	5.63	5.55
04/04/03	10.57	9.46	9.80	8.51	9.82	8.50	9.48	7.76	8.67	6.84	8.29	6.35	5.95	5.75
04/05/03	11.81	10.14	10.74	9.08	10.59	9.27	10.09	8.52	9.14	7.61	8.91	7.01	5.79	5.64
04/06/03	10.42	9.67	9.80	8.75	9.51	8.76	9.01	7.83	7.90	6.85	7.68	6.24	5.63	5.53
04/07/03	12.28	9.73	12.28	9.17	11.67	8.96	10.72	8.08	10.07	7.23	8.91	6.62	6.11	5.74

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
04/08/03	13.67	11.35	12.90	10.75	11.06	9.20	10.87	8.63	10.69	8.06	9.83	7.32	6.42	6.13
04/09/03	15.56	13.09	14.13	11.73	11.52	9.87	11.18	9.28	10.85	8.57	9.52	7.61	6.42	6.16
04/10/03	16.35	14.39	14.92	12.53	11.98	10.27	11.64	9.59	11.16	8.81	10.30	7.90	6.73	6.36
04/11/03	16.51	15.19	15.39	13.21	12.14	10.60	11.80	9.84	11.16	9.06	9.99	7.93	6.26	6.14
04/12/03	15.87	14.89	13.52	12.34	10.91	9.63	10.09	8.86	9.61	8.12	8.44	7.20	6.26	6.06
04/13/03	14.76	13.05	11.51	10.48	9.82	8.53	8.86	7.97	8.67	7.45	8.29	6.81	6.42	5.99
04/14/03	12.28	11.59	10.58	9.64	9.04	8.18	8.39	7.61	7.90	7.07	7.06	6.48	6.26	6.00
04/15/03	12.90	11.31	11.66	9.60	10.44	8.21	10.25	7.83	9.92	7.40	8.91	6.80	6.11	5.85
04/16/03	14.13	12.51	12.28	10.80	10.44	8.81	10.09	8.27	9.61	7.71	8.76	6.94	6.11	5.97
04/17/03	14.29	12.90	12.90	11.07	10.28	8.80	9.94	8.19	9.45	7.55	8.60	6.83	6.11	5.91
04/18/03	13.36	11.90	11.66	10.21	9.82	8.21	9.79	7.78	9.45	7.31	8.60	6.70	6.11	5.90
04/19/03	14.13	11.65	12.43	9.97	10.75	8.33	10.56	7.92	10.23	7.47	9.21	6.86	6.26	6.06
04/20/03	15.40	13.10	13.67	11.36	11.21	9.09	11.03	8.58	10.69	8.12	10.14	7.46	7.19	6.55
04/21/03	14.76	13.99	12.59	11.69	10.75	9.23	10.09	8.51	9.14	7.87	7.83	7.09	6.57	6.32
04/22/03	16.03	14.11	13.98	11.77	9.82	8.73	9.17	8.06	8.52	7.46	7.83	6.83	6.42	6.25
04/23/03	16.98	14.86	14.76	12.10	10.91	9.14	10.56	8.58	10.23	8.04	9.21	7.32	6.57	6.28
04/24/03	16.03	13.83	12.59	11.24	9.97	8.52	9.17	8.00	8.83	7.54	8.44	7.02	7.04	6.64
04/25/03	14.29	12.51	13.82	10.93	9.66	8.54	9.63	8.14	9.61	7.71	8.91	7.19	6.88	6.61
04/26/03	14.13	12.70	12.28	10.80	9.66	8.43	9.17	7.91	8.67	7.42	7.83	6.88	6.57	6.45
04/27/03	14.13	12.13	13.06	10.73	10.28	8.36	10.09	8.00	9.61	7.61	8.91	7.19	7.04	6.73
04/28/03	14.29	12.67	12.43	10.68	9.82	8.45	9.63	8.05	9.45	7.63	8.76	7.17	7.19	6.79
04/29/03	13.98	12.25	13.36	10.85	10.44	8.84	9.94	8.38	9.45	7.84	8.91	7.29	6.88	6.70
04/30/03	12.90	12.17	12.28	10.77	9.51	8.20	8.54	7.74	8.21	7.30	7.68	6.86	6.73	6.66
05/01/03	15.56	12.58	14.60	11.26	11.83	9.24	11.49	8.87	11.01	8.36	9.83	7.75	7.19	6.84
05/02/03	17.46	14.81	15.55	12.94	11.83	9.70	11.64	9.18	11.31	8.61	10.30	7.94	7.35	7.01
05/03/03	16.51	15.50	13.98	12.88	10.91	9.47	9.94	8.92	9.29	8.31	8.60	7.64	7.19	6.94
05/04/03	15.40	13.84	12.28	11.27	9.97	8.93	9.63	8.50	8.98	8.01	8.60	7.44	7.19	7.03
05/05/03	13.98	12.72	12.59	10.82	10.44	8.88	10.25	8.46	9.92	8.02	9.37	7.58	7.19	7.05
05/06/03	15.40	13.27	13.82	11.48	11.21	9.24	11.03	8.83	10.69	8.38	9.99	7.82	7.50	7.17
05/07/03	15.24	13.79	13.67	11.98	11.36	9.57	11.03	9.08	10.54	8.52	9.83	7.92	7.50	7.25
05/08/03	14.92	13.36	13.52	11.61	11.06	9.33	11.03	8.93	10.54	8.43	9.68	7.89	7.50	7.28
05/09/03	15.87	14.12	13.36	12.05	10.44	9.09	9.63	8.60	8.98	8.10	8.44	7.62	7.35	7.31
05/10/03	16.51	14.53	14.76	12.07	11.67	9.55	11.33	9.14	10.69	8.69	9.83	8.14	7.66	7.38

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
05/11/03	16.98	15.34	14.76	13.10	11.52	9.98	11.03	9.45	10.54	8.86	9.68	8.19	7.66	7.42
05/12/03	16.35	15.28	13.52	12.68	10.75	9.71	10.41	9.20	9.92	8.65	9.21	8.05	7.66	7.43
05/13/03	17.46	15.06	16.18	12.92	12.92	10.35	12.57	9.88	11.93	9.28	10.92	8.57	7.81	7.52
05/14/03	18.75	16.48	17.29	14.41	13.53	11.02	13.19	10.43	12.71	9.73	11.22	8.86	7.97	7.65
05/15/03	19.24	17.38	17.77	15.25	13.53	11.41	13.04	10.71	12.40	9.91	11.07	8.98	7.97	7.71
05/16/03	18.11	16.31	16.81	14.26	12.45	10.61	12.11	9.99	11.62	9.34	10.46	8.55	7.97	7.67
05/17/03	16.67	14.70	14.76	12.82	11.98	9.95	11.64	9.46	11.31	8.97	10.30	8.38	7.97	7.78
05/18/03	15.08	13.26	14.13	11.87	11.83	9.58	11.49	9.19	11.01	8.75	9.99	8.28	8.12	7.85
05/19/03	15.72	13.40	14.92	12.20	12.61	9.96	12.27	9.59	11.78	9.15	10.76	8.58	7.97	7.87
05/20/03	17.30	14.59	16.02	13.29	12.92	10.50	12.73	10.02	12.24	9.47	11.07	8.81	8.12	7.98
05/21/03	18.59	16.57	16.49	14.41	12.76	11.03	12.42	10.41	11.93	9.74	10.92	8.96	8.28	7.96
05/22/03	20.21	17.68	18.57	15.34	13.99	11.45	13.35	10.81	12.71	10.10	11.53	9.25	8.28	8.07
05/23/03	22.52	19.63	19.71	16.67	14.62	12.06	14.12	11.31	13.33	10.49	11.84	9.50	8.28	8.13
05/24/03	22.36	20.74	20.19	17.28	14.31	12.17	13.81	11.35	13.18	10.51	11.84	9.52	8.43	8.19
05/25/03	21.03	19.25	16.97	16.09	12.92	11.39	11.80	10.60	11.16	9.86	10.14	9.09	8.28	8.21
05/26/03	21.36	19.13	18.89	16.17	14.15	11.82	13.51	11.13	12.87	10.38	11.53	9.50	8.58	8.26
05/27/03	23.03	20.30	20.19	17.14	14.78	12.31	14.12	11.49	13.49	10.68	12.00	9.72	8.74	8.41
05/28/03	23.88	21.42	20.51	17.75	15.41	12.75	14.75	11.90	13.79	11.06	12.31	10.05	8.89	8.53
05/29/03	24.40	22.30	21.33	18.58	14.93	12.84	14.12	11.86	13.33	10.91	12.16	9.90	8.89	8.56
05/30/03	23.71	20.97	19.06	17.27	13.69	12.33	13.04	11.49	12.24	10.75	11.07	9.81	9.05	8.64
05/31/03	20.70	19.29	17.61	15.93	13.99	12.23	13.35	11.44	13.02	10.71	12.00	9.82	9.05	8.82
06/01/03	21.03	19.07	18.73	16.22	14.46	12.21			13.18	10.72	12.00	9.90	9.05	8.85
06/02/03	20.70	19.15	18.73	16.54	14.78	12.41			13.49	10.93	12.31	10.08	9.21	8.98
06/03/03	20.86	18.83	18.89	16.48	14.78	12.45			13.64	11.00	12.47	10.17	9.36	9.12
06/04/03	20.70	18.84	19.22	16.52	14.78	12.55	14.28	13.59	13.64	11.07	12.47	10.26	9.52	9.23
06/05/03	21.52	19.19	19.71	16.79	15.09	12.76	14.59	12.00	13.95	11.27	12.62	10.42	9.67	9.31
06/06/03	22.69	20.31	20.03	17.37	15.57	13.08	14.91	12.28	14.26	11.53	12.93	10.64	9.83	9.49
06/07/03	22.36	20.52	20.19	17.60	15.41	13.19	14.75	12.34	14.11	11.60	12.93	10.72	9.83	9.56
06/08/03	23.54	21.05	20.68	17.86	15.89	13.33	15.22	12.51	14.42	11.76	13.08	10.87	9.83	9.69
06/09/03	23.71	21.56	20.68	18.12	15.89	13.51	15.22	12.65	14.42	11.88	13.08	11.00	10.14	9.82
06/10/03	23.37	21.40	20.51	17.81	14.62	12.96	13.97	12.15	13.49	11.48	12.47	10.73	10.14	9.96
06/11/03	22.02	20.32	16.97	15.64	14.78	12.46	14.28	11.95	13.79	11.49	12.78	10.86	10.45	10.14
06/12/03	21.69	19.68	17.13	15.49	15.26	12.74	14.91	12.26	14.26	11.76	13.08	11.10	10.45	10.26

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
06/13/03	22.52	20.40	18.25	16.69	14.93	13.13	14.59	12.61	14.11	12.02	13.08	11.29	10.61	10.33
06/14/03	22.86	20.82	18.57	16.72	15.57	13.26	15.22	12.75	14.57	12.18	13.39	11.45	10.53	10.40
06/15/03	22.36	20.69	18.25	16.67	15.57	13.22	15.07	12.70	14.42	12.16	13.39	11.49	10.69	10.52
06/16/03	23.20	20.92	19.22	17.15	16.21	13.67	15.70	13.14	15.05	12.52	13.85	11.78	10.84	10.63
06/17/03	24.23	21.73	19.54	17.56	16.36	13.88	15.86	13.28	15.21	12.67	14.01	11.91	11.00	10.79
06/18/03	23.20	21.23	18.09	17.08	15.57	13.75	15.22	13.20	14.89	12.61	13.85	11.92	11.16	10.88
06/19/03	21.19	19.87	17.13	16.37	14.62	13.29	14.28	12.82	13.79	12.34	13.39	11.75	11.16	10.95
06/20/03	20.37	19.22	17.29	16.01	14.93	13.28	14.59	12.91	14.26	12.46	13.54	11.87	11.16	11.07
06/21/03	19.89	18.28	17.13	15.40	15.26	13.06	14.91	12.73	14.57	12.39	13.70	11.90	11.31	11.18
06/22/03	19.57	17.93	16.97	15.43	15.26	13.10	14.91	12.78	14.57	12.42	13.70	11.91	11.31	11.23
06/23/03	19.40	17.73	16.97	15.30	15.26	13.02	14.91	12.70	14.57	12.34	13.54	11.84	11.46	11.30
06/24/03	19.57	17.81	16.81	15.46	15.41	13.27	15.22	12.96	14.73	12.60	13.85	12.13	11.62	11.41
06/25/03	20.70	18.61	17.93	16.07	16.04	13.69	15.86	13.36	15.37	12.96	14.32	12.38	11.62	11.48
06/26/03	21.86	19.77	18.57	16.75	16.36	14.05	16.02	13.65	15.53	13.17	14.47	12.53	11.77	11.58
06/27/03	22.86	20.72	19.06	17.35	16.83	14.38	16.49	13.95	15.84	13.42	14.63	12.75	11.93	11.73
06/28/03	23.37	21.43	19.54	17.88	16.99	14.61	16.65	14.16	16.00	13.61	14.78	12.88	11.93	11.78
06/29/03	23.71	21.79	19.71	18.10	17.15	14.75	16.81	14.29	16.16	13.72	14.94	12.98	12.08	11.86
06/30/03	23.88	21.83	19.71	18.40	17.15	14.90	16.65	14.39	16.00	13.80	14.78	13.03	12.08	11.96
07/01/03	23.71	21.82	19.54	18.04	16.99	14.73	16.49	14.22	16.00	13.69	14.94	12.98	12.08	11.99
07/02/03	22.86	21.12	19.22	17.67	16.83	14.57	16.49	14.11	16.00	13.65	14.94	12.99	12.23	12.09
07/03/03	23.20	21.14	19.38	17.67	17.15	14.71	16.65	14.27	16.16	13.78	14.94	13.11	12.23	12.16
07/04/03	23.37	21.36	19.54	17.90	17.15	14.81	16.81	14.40	16.32	13.91	15.10	13.24	12.39	12.23
07/05/03	23.37	21.53	19.54	17.91	17.15	14.84	16.81	14.41	16.32	13.93	15.26	13.28	12.54	12.31
07/06/03	23.37	21.59	19.71	18.03	17.31	14.96	16.97	14.53	16.48	14.05	15.42	13.40	12.54	12.39
07/07/03	23.88	21.91	19.87	18.29	17.63	15.22	17.13	14.71	16.63	14.20	15.42	13.50	12.54	12.46
07/08/03	23.71	21.95	19.87	18.46	17.47	15.30	16.97	14.80	16.48	14.28	15.42	13.57	12.70	12.54
07/09/03	24.06	22.04	19.87	18.28	17.79	15.36	17.44	14.88	16.79	14.36	15.73	13.67	12.86	12.67
07/10/03	24.40	22.26	20.19	18.55	17.96	15.53	17.44	15.01	16.95	14.50	15.89	13.79	12.86	12.70
07/11/03	25.09	23.02	20.51	19.00	18.12	15.75	17.76	15.21	17.11	14.65	16.05	13.91	13.01	12.80
07/12/03	25.44	23.45	20.68	19.13	18.28	15.86	17.76	15.29	17.11	14.73	16.05	14.01	13.01	12.92
07/13/03	24.74	23.16	20.51	19.14	18.12	15.87	17.61	15.28	17.11	14.74	15.89	14.02	13.01	12.94
07/14/03	24.06	22.41	20.19	18.80	18.12	15.77	17.61	15.24	17.11	14.73	16.05	14.04	13.16	13.01
07/15/03	24.40	22.45	20.51	18.91	18.28	15.94	17.76	15.37	17.27	14.84	16.05	14.16	13.32	13.11

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
07/16/03	25.09	23.15	20.68	19.21	18.44	16.15	17.92	15.55	17.43	15.01	16.21	14.28	13.32	13.18
07/17/03	25.27	23.38	20.35	19.11	17.79	15.90	17.28	15.29	16.79	14.79	15.73	14.13	13.32	13.27
07/18/03	25.09	23.56	20.84	19.22	18.60	16.29	18.08	15.69	17.43	15.16	16.53	14.47	13.47	13.38
07/19/03	25.62	24.06	21.01	19.78	18.76	16.52	18.24	15.90	17.59	15.33	16.53	14.60	13.63	13.45
07/20/03	25.62	24.05	21.33	19.94	18.93	16.70	18.41	16.07	17.91	15.51	16.68	14.78	13.63	13.54
07/21/03	25.62	23.73	21.17	19.86	18.93	16.69	18.41	16.03	17.91	15.48	16.68	14.73	13.78	13.61
07/22/03	26.14	24.22	21.83	20.04	18.93	16.75	18.41	16.10	17.91	15.54	16.84	14.83	13.93	13.73
07/23/03	25.44	24.33	21.17	20.02	18.93	16.81	18.24	16.15	17.75	15.61	16.68	14.89	13.93	13.78
07/24/03	24.74	23.52	20.35	19.34	17.63	16.26	16.81	15.63	16.32	15.18	15.42	14.62	14.09	13.92
07/25/03	23.71	22.70	20.35	18.94	18.12	16.73	17.76	16.14	17.27	15.65	16.53	15.00	14.24	14.08
07/26/03	23.37	22.34	20.03	18.88	17.79	16.35	17.28	15.81	17.11	15.42	16.37	14.88	14.24	14.13
07/27/03	23.71	22.13	20.68	18.92	18.93	16.84	18.57	16.29	18.07	15.88	17.16	14.99	14.56	14.28
07/28/03	24.74	22.95	21.01	19.66	19.74	17.30	19.06	16.66	18.56	16.21			14.56	14.50
07/29/03	25.27	23.56	21.67	20.23	19.90	17.58	19.22	16.91	18.88	16.44	17.64	16.37	14.71	14.64
07/30/03	25.44	23.83	21.83	20.44	19.90	17.62	19.22	16.96	18.72	16.47	17.80	15.77	14.87	14.74
07/31/03	25.44	23.68	21.50	20.22	19.74	17.60	19.22	16.98	18.72	16.52	17.80	15.85	15.03	14.89
08/01/03	24.74	23.26	21.01	19.84	19.68	17.48	19.06	16.89	18.72	16.51	17.80	15.88	15.19	15.03
08/02/03	23.88	22.24	20.35	19.21	18.55	17.01	17.28	16.36	16.95	16.03	16.37	15.55	15.34	15.16
08/03/03	21.69	21.05	19.87	18.75	18.71	17.28	17.92	16.76	17.75	16.47	17.16	15.98	15.34	15.31
08/04/03	23.54	21.59	21.33	19.60	20.00	17.86	19.55	17.31	19.21	16.96	18.28	16.38	15.66	15.50
08/05/03	24.23	22.48	21.67	20.27	20.16	18.18	19.71	17.57	19.37	17.18	18.44	16.54	15.82	15.65
08/06/03	24.06	22.61	21.50	20.17	20.16	18.13	19.71	17.55	19.37	17.20	18.61	16.64	15.98	15.84
08/07/03	23.71	22.32	21.17	19.96	20.16	18.17	19.71	17.59	19.37	17.27	18.61	16.71	16.13	15.94
08/08/03	23.37	21.90	21.01	19.68	20.16	18.11	19.71	17.57	19.54	17.29	18.61	16.79	16.29	16.17
08/09/03	23.37	21.69	21.33	19.79	20.48	18.34	20.19	17.81	19.86	17.55	19.09	17.02	16.45	16.33
08/10/03	23.71	21.85	21.33	19.99	20.64	18.50	20.19	17.97	20.03	17.71	19.09	17.18	16.61	16.52
08/11/03	23.37	21.92	21.33	20.08	20.64	18.69	20.36	18.17	20.03	17.87	19.25	17.34	16.77	16.69
08/12/03	22.69	21.30	21.01	19.88	20.32	18.53	20.03	18.10	19.86	17.87	19.09	17.46	16.93	16.86
08/13/03	23.37	21.54	21.01	19.88	20.64	18.74	20.36	18.29	20.19	18.05	19.41	17.56	17.08	17.01
08/14/03	22.86	21.49	21.17	19.97	20.81	18.76	20.52	18.33	20.19	18.12	19.41	17.66	17.24	17.13
08/15/03	23.37	21.63	21.67	20.40	20.32	18.82	20.03	18.34	19.70	18.10	18.93	17.67	17.24	17.21
08/16/03	23.37	21.90	21.50	20.46	20.48	19.03	20.19	18.61	20.03	18.40	19.41	17.93	17.41	17.33
08/17/03	22.69	21.18	21.01	19.76	20.64	18.72	20.36	18.34	20.19	18.22	19.57	17.83	17.57	17.40

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
08/18/03	22.86	21.18	21.50	20.08	20.97	19.10	20.68	18.71	20.51	18.53	19.89	18.08	17.73	17.49
08/19/03	23.37	21.65	21.83	20.48	21.30	19.35	21.01	18.95	20.84	18.73	20.06	18.23	17.73	17.59
08/20/03	23.03	21.62	21.50	20.47	20.81	19.26	20.52	18.83	20.51	18.63	19.73	18.15	17.73	17.61
08/21/03	22.02	20.35	20.35	19.21	19.68	18.38	18.89	18.01	18.88	17.95	18.61	17.70	17.73	17.64
08/22/03	20.86	20.13	20.51	19.30	20.00	18.99	19.87	18.69	20.03	18.58	19.73	18.17	17.89	17.74
08/23/03	21.86	20.20	21.17	19.65	21.14	19.18	20.84	18.86	20.84	18.73	20.06	18.33	17.89	17.77
08/24/03	22.52	20.93	21.67	20.28	21.30	19.40	21.01	19.01	20.84	18.83	20.06	18.37	17.89	17.78
08/25/03	22.69	21.28	21.67	20.39	21.47	19.47	21.17	19.08	21.00	18.89	20.22	18.42	18.05	17.81
08/26/03	21.86	20.48	20.84	19.82	20.48	18.97	19.55	18.54	19.21	18.34	18.93	17.96	17.89	17.78
08/27/03	22.36	20.48	22.00	20.10	21.63	19.61	21.33	19.26	21.33	19.09	20.38	18.62	18.05	17.85
08/28/03	22.02	20.82	22.00	20.50	20.97	19.55	20.84	19.08	20.67	18.87	20.06	18.42	18.05	17.85
08/29/03	21.36	20.28	21.50	19.79	20.16	18.96	19.71	18.53	19.70	18.38	19.41	18.07	18.05	17.88
08/30/03	21.86	20.04	22.00	19.82	21.14	19.33	21.01	18.97	20.84	18.82	20.22	18.40	18.05	17.89
08/31/03	21.52	20.05	21.67	19.79	20.97	19.26	20.84	18.88	20.84	18.72	20.22	18.33	18.05	17.93
09/01/03	20.86	19.68	21.17	19.60	20.64	19.20	20.36	18.79	20.35	18.64	19.73	18.27	18.05	17.94
09/02/03	22.02	20.20	22.16	20.16	21.47	19.60	21.17	19.20	21.17	19.02	20.38	18.56	18.05	17.93
09/03/03	22.36	20.66	22.83	20.70	21.30	19.76	21.17	19.30	21.00	19.04	20.22	18.51	18.05	17.81
09/04/03	21.52	20.56	21.83	20.50	20.97	19.67	20.68	19.17	20.51	18.88	19.73	18.36	17.89	17.77
09/05/03	22.52	20.95	22.83	20.85	20.97	19.63	20.68	19.15	20.51	18.85	19.73	18.33	17.89	17.71
09/06/03	23.20	21.30	22.83	20.92	21.14	19.66	20.84	19.15	20.67	18.87	20.06	18.36	17.89	17.73
09/07/03	22.19	20.84	21.33	20.20	20.32	19.18	19.87	18.70	19.70	18.48	19.25	18.06	17.73	17.72
09/08/03	20.70	18.97	19.71	18.69	19.52	18.32	18.89	17.94	18.88	17.82	18.77	17.60	17.73	17.72
09/09/03	17.94	16.45	17.77	16.61	18.07	17.12	17.61	16.91	17.59	16.99	17.64	17.09	17.89	17.75
09/10/03	16.98	15.76	17.77	16.26	19.03	17.49	19.22	17.43	19.37	17.51	18.93	17.51	17.89	17.77
09/11/03	18.43	16.76	19.38	17.52	20.00	18.17	19.87	18.03	20.03	18.07	19.73	17.95	17.89	17.79
09/12/03	18.59	17.65	19.38	18.16	19.52	18.31	19.06	18.00	18.88	17.90	18.77	17.63	17.73	17.67
09/13/03	17.78	16.43	18.25	16.55	19.03	17.15	19.06	17.09	19.37	17.24	19.25	17.34	17.73	17.59
09/14/03	17.46	16.08	18.57	16.59	19.19	17.56	19.22	17.41	19.54	17.47	19.25	17.38	17.73	17.50
09/15/03	16.82	15.93	17.61	16.60	18.55	17.32	18.08	17.08	18.23	17.08	18.12	17.00	17.41	17.36
09/16/03	16.82	16.00	17.93	16.67	18.39	17.42	18.41	17.24	18.39	17.25	18.28	17.15	17.41	17.21
09/17/03	16.51	15.50	17.29	16.06	17.74	16.65	17.76	16.53	18.07	16.60	18.12	16.62	17.08	16.99
09/18/03	16.19	14.95	16.97	15.34	17.91	16.35	17.92	16.28	18.23	16.41	18.28	16.50	17.08	16.84
09/19/03	16.67	15.17	17.61	15.80	18.39	16.85	18.41	16.72	18.56	16.74	18.28	16.64	16.93	16.69

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
09/20/03	17.30	15.83	18.09	16.33	18.07	16.90	18.08	16.67	18.39	16.65	18.12	16.49	16.61	16.41
09/21/03	17.14	15.92	17.93	16.21	18.07	16.69	17.92	16.45	18.23	16.43	17.96	16.27	16.45	16.19
09/22/03	17.46	16.00	18.41	16.35	18.39	16.76	18.24	16.50	18.23	16.40	17.96	16.19	16.29	16.02
09/23/03	17.62	16.25	18.57	16.61	18.23	16.83	18.08	16.51	18.23	16.36	17.80	16.12	16.13	15.97
09/24/03	17.62	16.27	18.25	16.41	18.23	16.69	18.08	16.41	18.23	16.30	17.80	16.07	16.13	15.89
09/25/03	17.62	16.26	18.25	16.45	17.91	16.71	17.92	16.37	17.91	16.21	17.64	15.94	15.98	15.77
09/26/03	18.43	16.97	18.89	16.89	18.39	16.93	18.24	16.58	18.23	16.39	17.80	16.05	15.82	15.66
09/27/03	18.92	17.60	19.06	17.39	18.39	17.11	18.24	16.72	18.23	16.44	17.80	16.06	15.82	15.60
09/28/03	18.75	17.47	19.06	17.37	18.39	17.08	18.24	16.69	18.07	16.42	17.64	16.04	15.82	15.62
09/29/03	18.43	17.34	18.73	17.27	18.23	17.03	17.92	16.61	17.91	16.36	17.48	16.00	15.82	15.62
09/30/03	18.43	17.28	18.73	17.19	18.23	17.01	17.92	16.63	17.91	16.36	17.48	15.98	15.82	15.59
10/01/03	17.78	16.96	18.41	17.03	18.16	17.01	17.76	16.53	17.43	16.26	18.28	15.98	15.82	15.67
10/02/03	18.92	17.66	18.89	17.74	18.64	17.54	18.41	17.07	18.23	16.79	17.96	16.31	15.66	15.55
10/03/03	19.02	17.92	19.22	17.80	18.48	17.33	18.08	16.81	17.91	16.52	17.48	16.14	15.91	15.69
10/04/03	18.69	17.62	18.73	17.40	18.32	17.14	18.08	16.66	18.07	16.43	17.64	16.10	16.23	15.84
10/05/03	18.53	17.52	18.73	17.32	18.16	17.18	17.92	16.70	17.91	16.49	17.64	16.11	16.07	15.85
10/06/03	18.53	17.51	18.73	17.30	18.16	17.13	17.92	16.64	17.91	16.43	17.64	16.14	16.07	15.82
10/07/03	18.04	17.20	18.09	17.05	17.83	16.89	17.28	16.39	17.11	16.15	16.84	15.84	15.91	15.83
10/08/03	17.72	16.59	18.09	16.61	17.67	16.70	17.28	16.25	17.43	16.11	17.16	15.88	15.91	15.63
10/09/03	16.92	15.74	16.65	15.90	17.19	16.04	16.65	15.62	16.63	15.48	16.21	15.23		
10/10/03	15.02	13.95	15.07	14.06	15.62	14.54	15.22	14.21	15.21	14.15	15.42	14.24		
10/11/03	13.62	12.53	13.36	12.74	14.82	14.03	14.59	13.75	14.73	13.77	14.94	13.90		
10/12/03	13.92	12.86	14.76	13.63	15.46	14.79	15.38	14.53	15.37	14.54	15.42	14.59		
10/13/03	13.92	12.88	14.29	13.26	14.98	14.19	14.91	13.93	15.05	13.98	15.42	14.15		
10/14/03	13.92	13.07	14.76	13.41	14.98	14.29	14.59	13.98	14.89	13.96	15.10	13.92		
10/15/03	13.00	12.16	13.21	12.50	14.51	13.49	14.28	13.12	14.11	12.95	13.39	12.85		
10/16/03	13.92	12.71	14.60	13.27	15.77	14.46	15.22	13.94	14.89	13.53	14.47	13.32		
10/17/03	14.86	13.74	15.39	14.09	16.09	14.95	15.54	14.31	15.21	13.84	14.78	13.40		
10/18/03	14.70	14.03	15.55	14.30	16.56	15.20	15.86	14.54	15.53	14.11	14.78	13.66		
10/19/03	14.86	14.04	15.87	14.55	16.41	15.28	15.70	14.44	15.05	13.88	14.32	13.29		
10/20/03	15.18	14.40	15.87	14.67	16.24	15.15	15.38	14.21	14.89	13.59	14.16	13.00		
10/21/03	15.65	14.68	16.02	14.68	16.09	15.08	15.38	14.10	14.89	13.47	14.32	12.93		
10/22/03	15.02	14.22	15.55	14.28	15.77	14.79	14.91	13.78	14.42	13.15	13.85	12.69		

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
10/23/03	14.39	13.71	14.29	13.57	15.30	14.15	14.12	13.16	13.18	12.55	13.08	12.19		
10/24/03	13.00	12.12	12.59	11.63	13.43	12.33	12.27	11.30	11.62	10.75	11.84	10.75		
10/25/03	11.91	11.19	11.66	10.63	12.81	11.75	11.96	10.78	11.47	10.35	11.84	10.53		
10/26/03	12.53	11.41	12.28	10.97	13.74	12.32	13.04	11.50	12.71	11.13	12.62	11.31		
10/27/03	13.00	12.04	13.06	11.81	14.67	13.32	13.81	12.43	13.33	12.01	13.08	11.92		
10/28/03	14.23	13.14	13.82	12.89	14.67	13.94	13.81	12.95	13.33	12.44	12.93	12.26		
10/29/03	13.92	12.81	13.36	12.45	14.67	13.16	13.51	12.18	12.56	11.57	12.47	11.27		
10/30/03	11.44	10.17	10.74	9.74	11.88	10.80	10.56	9.65	9.76	9.03	9.83	9.11		
10/31/03	9.27	8.74	9.18	8.22	10.49	9.81	9.63	8.67	8.83	8.03	9.52	8.36		
11/01/03	8.34	7.63	7.80	6.84	9.87	8.97	9.01	7.83	8.21	7.28	9.06	7.76		
11/02/03	7.42	6.95	7.18	6.44	10.03	8.88	8.86	7.70	7.90	7.09	8.29	7.55		
11/03/03	8.34	7.81	8.11	7.38	10.03	9.17	9.18	8.39	8.52	7.78	9.06	8.39		
11/04/03	8.04	7.54	7.96	7.02	9.49	9.19	9.03	8.20	8.06	7.44	9.06	7.69		
11/05/03	7.57	6.98	7.03	6.28	9.03	8.38	8.26	7.38	7.44	6.51	7.52	6.77		
11/06/03	7.11	6.38	6.87	5.78	8.57	7.74	7.94	6.88	7.13	5.95	7.68	6.24		
11/07/03	6.96	6.26	6.72	5.80	9.33	8.07	8.10	6.94	7.44	6.11	7.68	6.49		
11/08/03	8.66	7.61	8.11	7.02	9.96	8.87	9.18	7.80	8.52	7.06	8.60	7.29		
11/09/03	8.50	8.01	8.11	7.44	9.96	9.30	9.03	8.19	7.90	7.23	7.68	7.14		
11/10/03	9.89	9.05	9.49	8.49	10.58	9.84	9.34	8.51	8.37	7.58	8.29	7.39		
11/11/03	11.14	10.30	10.27	9.37	10.88	10.32	9.81	9.08	8.83	8.06	7.98	7.53		
11/12/03	10.21	9.48	8.88	8.11	9.96	8.69	8.72	7.56	7.28	6.53	7.37	6.35		
11/13/03	8.81	8.09	7.18	6.67	9.03	8.10	7.79	6.97	6.51	5.76	6.59	5.61		
11/14/03	7.88	7.37	7.03	6.18	8.57	7.56	7.32	6.47	6.19	5.37	6.44	5.49		
11/15/03	8.96	8.23	8.26	7.31	10.11	8.96	8.56	7.58	7.28	6.55	7.06	6.42		
11/16/03	9.89	9.46	9.34	8.65	10.42	9.73	9.03	8.33	7.90	7.25	7.68	6.86		
11/17/03	9.58	9.24	8.88	8.43	9.96	9.39	8.56	8.13	7.28	6.98	6.91	6.59		
11/18/03	10.36	9.55	9.80	8.74	10.42	9.51	9.03	8.12	8.06	7.08	7.83	6.77		
11/19/03	10.36	9.74	9.80	9.04	10.58	9.93	9.18	8.57	8.06	7.49	7.37	7.03		
11/20/03	9.74	9.01	9.03	8.22	10.27	9.00	8.87	7.89	7.59	6.78	7.52	6.60		
11/21/03	8.34	7.54	7.18	6.43	8.57	7.57	7.48	6.56	6.03	5.34	6.28	5.31		
11/22/03	6.80	5.65	5.48	4.45	7.19	5.96	6.23	5.00	4.63	3.68	4.57	3.89		
11/23/03	5.71	4.92	5.01	3.90	6.88	5.75	5.61	4.49	4.47	3.39	4.88	3.83		
11/24/03	6.02	5.35	5.48	4.47	7.34	6.40	6.07	5.21	5.26	4.30	5.51	4.65		

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
11/25/03	5.71	5.35	5.01	4.55	7.19	6.50	6.07	5.40	5.10	4.44	5.35	4.74		
11/26/03	6.80	5.94	6.10	5.30	7.65	7.15	6.54	5.97	5.72	4.98	5.97	5.16		
11/27/03	6.49	5.92	5.63	4.91	7.65	6.69	6.39	5.68	5.41	4.70	5.66	4.79		
11/28/03	6.33	5.89	6.10	5.31	7.81	6.90	6.54	5.74	5.41	4.73	5.51	4.54		
11/29/03	7.73	7.01	7.03	6.53	8.72	7.80	7.32	6.62	6.35	5.75				
11/30/03	8.81	8.32	7.96	7.53	9.33	8.62	8.10	7.44	6.97	6.54				
12/01/03	9.89	9.26	8.88	8.18	9.64	9.01	8.54	7.85	7.44	6.81				
12/02/03	10.21	9.66	12.28	8.55	9.96	9.25	8.86	7.99	7.74	7.03				
12/03/03	10.36	9.85	13.52	8.20	9.96	9.29	8.86	8.04	7.90	7.11				
12/04/03	9.58	8.47	8.72	5.64	9.64	8.31	8.24	7.08	7.13	6.17				
12/05/03	7.88	7.67	10.27	8.00	9.49	8.71	8.39	7.58	7.44	6.67				
12/06/03	9.27	8.56	10.58	8.72	9.80	9.39	8.70	8.22	7.59	7.32				
12/07/03	9.27	9.08	12.59	6.21	9.64	8.88	8.39	7.67	7.28	6.74				
12/08/03	8.50	8.03	7.49	5.72	8.57	8.05	7.46	6.72	6.19	5.73				
12/09/03	7.73	7.00	6.87	6.02	8.27	7.10	6.69	5.67	5.57	4.63				
12/10/03	6.80	6.50	6.10	5.78	7.50	6.82	6.07	5.39	4.94	4.37				
12/11/03	7.88	7.30	6.72	6.15	7.81	7.29	6.69	5.99	5.72	5.09				
12/12/03	7.27	6.83	5.94	5.63	7.50	6.89	6.22	5.63	5.10	4.66				
12/13/03	7.73	7.26	6.87	6.42	8.11	7.39	6.84	6.17	5.88	5.25				
12/14/03	7.88	7.69	7.18	6.72	8.11	7.63	6.69	6.40	5.72	5.46				
12/15/03	7.11	6.56	6.25	5.61	7.34	6.62	5.91	5.23	4.79	4.26				
12/16/03	6.18	5.75	5.01	4.48	6.57	5.81	5.29	4.51	4.01	3.56				
12/17/03	6.64	6.03	5.94	5.08	6.57	6.21	5.60	4.81	4.63	3.82				
12/18/03	6.33	5.83	5.32	4.56	6.57	6.01	5.44	4.64	4.47	3.74				
12/19/03	5.71	5.32	5.01	4.36	6.73	5.94	5.44	4.56	4.47	3.64				
12/20/03	6.49	5.91	5.63	4.99	7.34	6.47	6.07	5.18	5.10	4.31				
12/21/03	7.57	6.88	6.87	5.88	7.96	7.16	6.53	5.85	5.57	4.97				
12/22/03	6.96	6.48	6.10	5.43	7.34	6.31	5.76	4.95	4.79	4.00				
12/23/03	6.33	5.78	4.86	4.52	6.73	5.88	5.13	4.44	4.16	3.50				
12/24/03	6.02	5.66	5.63	5.15	7.03	6.53	5.76	5.24	4.79	4.35				
12/25/03	7.11	6.53	6.56	5.87	7.34	6.68	6.22	5.49	5.26	4.68				
12/26/03	6.80	5.68	5.48	4.41	6.57	5.48	5.29	4.19	4.32	3.26				
12/27/03	4.77	4.40	3.76	3.21	5.18	4.36	3.88	2.97	2.90	2.10				

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
12/28/03	5.24	4.87	3.92	3.39	5.64	4.75	4.35	3.47	3.22	2.64				
12/29/03	5.24	4.86	4.23	3.79	5.96	5.15	4.51	3.88	3.53	2.98				
12/30/03	4.77	4.21	3.92	3.31	5.80	4.77	4.51	3.63	3.53	2.84				
12/31/03	4.46	3.99	3.92	3.27	5.49	4.78	4.19	3.58	3.22	2.66				
01/01/04	4.93	4.30	4.38	3.59	6.26	5.16	4.98	4.13	4.16	3.37				
01/02/04	5.08	4.68	4.70	4.14	6.11	5.48	4.98	4.25	3.84	3.34				
01/03/04	4.93	4.55	4.38	3.84	5.80	4.96	4.51	3.72	3.53	2.87				
01/04/04	5.24	4.61	4.54	3.70	5.64	4.85	4.35	3.63	3.37	2.76				
01/05/04	3.99	2.60	2.82	1.34	4.71	2.87	3.25	1.73	2.27	0.95				
01/06/04	2.09	1.60	1.40	0.76	3.62	2.65	2.14	1.45	1.31	0.61				
01/07/04	2.73	1.97	2.03	1.57	3.93	3.19	2.62	1.94	1.79	1.15				
01/08/04	4.62	3.54	4.07	2.94	5.33	4.38	4.19	3.27	3.37	2.50				
01/09/04	5.39	4.94	4.86	3.97	5.80	5.03	4.67	3.90	3.84	3.04				
01/10/04	5.39	4.96	4.70	4.07	5.96	5.10	4.82	3.94	3.84	3.07				
01/11/04	5.08	4.69	4.54	3.96	5.64	4.91	4.51	3.69	3.37	2.81				
01/12/04	5.08	4.96	4.23	3.72	5.33	4.62	4.19	3.47	3.06	2.52				
01/13/04	4.93	4.76	4.23	3.65	5.18	4.53	4.04	3.32	2.90	2.36				
01/14/04	4.77	4.55	3.76	3.32	4.71	4.00	3.41	2.88	2.42	1.94				
01/15/04	4.30	4.05	2.82	2.50	4.24	3.52	2.93	2.24	1.63	1.31				
01/16/04	4.30	3.88	3.13	2.43	4.09	3.49	2.77	2.24	1.63	1.29				
01/17/04	5.08	4.54	3.76	3.18	4.87	4.12	3.57	2.89	2.58	2.01				
01/18/04	5.08	4.78	3.60	2.97	4.56	3.89	3.41	2.68	2.27	1.75				
01/19/04	5.55	4.97	4.38	3.48	5.02	4.29	3.72	2.98	2.58	2.01				
01/20/04	5.86	5.48	4.07	3.76	5.02	4.45	3.57	3.24	2.58	2.30				
01/21/04	5.86	5.67	3.92	3.70	4.71	4.40	3.57	3.22	2.42	2.28				
01/22/04	5.55	5.35	4.07	3.52	4.87	4.21	3.57	3.05	2.58	2.07				
01/23/04	4.93	4.38	3.29	2.71	4.40	3.55	2.93	2.35	2.11	1.40				
01/24/04	4.77	4.16	3.60	2.76	4.40	3.54	2.93	2.26	1.79	1.38				
01/25/04	4.77	3.92	3.60	2.45	4.87	3.63	3.57	2.41	2.58	1.54				
01/26/04	5.39	4.55	4.54	3.50	5.49	4.46	4.19	3.22	3.22	2.31				
01/27/04	5.71	5.26	4.86	4.21	5.49	4.85	4.19	3.61	3.22	2.67				
01/28/04	6.49	6.02	5.17	4.67	5.49	5.12	4.35	3.93	3.37	3.00				
01/29/04	6.96	6.47	5.48	5.02	5.80	5.29	4.67	4.09	3.69	3.20				

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
01/30/04	7.57	6.78	6.25	5.47	6.42	5.66	5.29	4.59	4.32	3.70				
01/31/04	6.33	5.71	5.01	4.32	5.49	4.53	4.19	3.33	3.06	2.33				
02/01/04	5.71	5.45	4.07	3.72	4.87	4.10	3.72	2.88	2.58	1.92			2.12	1.88
02/02/04	5.55	5.08	3.60	3.36	4.71	4.07	3.25	2.77	2.11	1.77			1.81	1.49
02/03/04	5.39	4.58	4.38	3.67	5.02	4.32	3.73	3.13	2.90	2.10			1.81	1.60
02/04/04	7.11	6.10	5.63	4.62	6.11	5.13	4.83	3.93	3.84	2.84			2.12	1.98
02/05/04	7.11	6.39	5.79	4.83	6.11	5.17	4.83	4.13	4.01	2.99	3.79	2.94	2.12	2.05
02/06/04	6.02	5.64	5.01	4.10	5.64	4.70	4.36	3.67	3.37	2.47	3.17	2.15	1.97	1.69
02/07/04	6.02	5.36	5.48	4.28	5.96	4.80	4.52	3.69	3.37	2.47	3.02	1.91	1.81	1.61
02/08/04	6.64	5.76	5.63	4.36	5.80	4.65	4.36	3.46	3.22	2.24	3.02	1.86	1.97	1.83
02/09/04	6.80	5.86	5.48	4.19	5.49	4.44	4.36	3.42	3.53	2.14	3.33	1.85	2.12	1.84
02/10/04	6.18	5.53	5.01	3.89	5.33	4.42	4.04	3.35	3.22	2.04	3.02	1.76	1.81	1.61
02/11/04	5.39	5.09	3.76	3.41	4.87	4.07	3.73	3.01	1.94	1.62	1.75	1.42	1.97	1.84
02/12/04	5.08	4.91	3.29	3.02	4.24	3.61	2.94	2.65	1.63	1.28	1.59	1.17	1.97	1.94
02/13/04	5.08	4.38	3.92	2.74	4.71	3.63	3.42	2.65	2.58	1.38	2.70	1.22	2.28	1.92
02/14/04	5.55	4.41	4.54	3.03	5.18	3.79	3.73	2.78	2.90	1.65	2.86	1.58	1.97	1.84
02/15/04	6.33	5.24	5.17	3.76	5.80	4.43	4.20	3.30	3.53	2.30	3.33	2.05	1.97	1.82
02/16/04	5.55	5.18	4.07	3.70	5.64	4.70	4.36	3.52	3.69	2.50	2.86	2.21	1.81	1.53
02/17/04	6.64	5.67	6.25	5.23	7.03	5.93	5.61	4.63	5.26	4.01	4.57	3.43	1.49	1.44
02/18/04	8.19	7.41	6.87	6.38	7.03	6.63	5.61	5.30	4.79	4.43	3.95	3.54	1.49	1.49
02/19/04	8.50	7.56	7.33	6.08	7.19	6.06	6.38	4.88	5.57	3.90	4.88	3.05	1.97	1.69
02/20/04	7.88	7.14	6.72	5.51	6.73	5.13	5.29	3.79	4.01	2.94	3.33	2.44	1.81	1.66
02/21/04	7.27	6.50	5.48	3.93	4.56	3.33	3.88	2.62	3.53	2.26	3.33	1.96	1.81	1.63
02/22/04	6.49	5.53	4.38	3.63	4.87	3.44	4.04	2.70	3.84	2.38	3.33	2.06	1.81	1.63
02/23/04	6.80	5.76	4.86	4.10	4.71	3.61	3.88	2.88	3.69	2.51	3.33	2.16	1.81	1.67
02/24/04	6.49	6.08	4.54	3.96	4.09	3.43	3.25	2.73	2.90	2.38	2.54	2.06	1.81	1.70
02/25/04	5.39	4.61	3.44	2.75	3.62	2.67	2.93	2.19	2.74	1.95	2.38	1.75	1.81	1.69
02/26/04	6.49	5.33	4.86	4.05	4.56	3.77	3.88	3.17	3.53	2.82	3.17	2.42	1.97	1.83
02/27/04	7.57	6.44	5.48	4.59	4.87	3.97	4.51	3.30	4.32	2.96	3.64	2.54	2.12	1.89
02/28/04	7.42	6.46	5.48	4.52	5.33	4.00	4.98	3.39	4.63	3.09	4.11	2.70	2.44	2.15
02/29/04	6.96	6.11	5.01	4.33	5.02	3.88	4.51	3.27	4.32	2.98	3.79	2.64	2.28	2.17
03/01/04	6.18	5.79	4.70	4.19	5.02	3.93	4.51	3.35	4.16	3.04	3.64	2.73	2.92	2.27
03/02/04	7.27	6.26	5.94	5.02	6.88	5.31	5.91	4.53	5.26	3.88	4.57	3.35	4.02	2.61

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
03/03/04	7.27	6.39	6.41	5.35	6.88	5.75	6.07	4.63	5.10	3.65	4.57	3.10	2.92	2.40
03/04/04	8.19	7.38	6.87	5.96	6.73	5.93	5.76	4.71	4.63	3.71	3.79	3.20	2.92	2.63
03/05/04	7.42	7.03	6.10	5.41	6.57	5.64	5.60	4.51	4.79	3.50	4.42	3.16	3.23	2.90
03/06/04	9.43	7.87	8.42	6.53	8.42	6.87	7.77	5.84	6.97	5.00	6.28	4.41	3.55	3.09
03/07/04	10.83	9.17	10.12	7.91	9.80	7.92	9.01	6.80	8.06	5.89	7.22	5.17	2.92	2.68
03/08/04	11.91	10.29	10.89	8.87	10.42	8.61	9.48	7.43	8.67	6.41	7.52	5.42	3.08	2.61
03/09/04	11.76	10.62	10.74	9.12	9.96	8.72	9.17	7.48	8.52	6.48	7.37	5.59	3.23	2.72
03/10/04	12.07	10.60	11.20	9.20	10.42	8.82	9.63	7.62	8.98	6.67	7.68	5.63	3.39	2.85
03/11/04	11.91	10.50	10.89	9.09	9.96	8.61	9.17	7.33	8.37	6.31	7.22	5.44	3.23	2.86
03/12/04	12.53	10.87	11.66	9.54	11.04	9.26	10.41	8.05	9.45	7.02	8.14	5.94	3.39	2.96
03/13/04	12.69	11.34	11.82	9.92	10.73	9.27	10.09	7.95	9.14	6.91	7.83	5.88	3.55	3.03
03/14/04	12.69	11.58	11.51	9.99	10.88	9.47	10.09	8.15	9.14	7.18	7.83	6.20	3.55	3.14
03/15/04	12.53	11.18	11.66	9.82	10.73	9.32	10.09	8.05	9.45	7.08	8.14	6.01	3.71	3.17
03/16/04	13.31	11.63	11.97	9.92	11.04	9.40	10.25	8.07	9.61	7.10	8.14	6.10	3.71	3.22
03/17/04	13.62	11.93	12.43	10.34	11.66	9.85	10.87	8.56	10.23	7.59	8.76	6.50	3.86	3.34
03/18/04	13.00	11.93	12.12	10.60	11.66	10.22	11.03	9.01	10.54	8.03	8.76	6.95	4.02	3.51
03/19/04	13.62	12.28	13.06	11.13	12.12	10.63	11.33	9.30	10.54	8.26	9.37	6.92	4.17	3.59
03/20/04	13.31	11.84	12.43	10.57	11.81	10.11	10.87	8.58	10.07	7.51	8.76	6.38	4.17	3.67
03/21/04	14.08	12.38	13.36	11.14	12.42	10.58	11.64	9.12	11.01	8.14	9.37	7.03	4.33	3.84
03/22/04	15.02	13.61	13.67	12.07	12.89	11.41	12.11	9.98	11.31	8.94	9.52	7.65	4.33	3.95
03/23/04	15.97	14.24	15.23	12.88	13.96	12.09	13.04	10.58	12.40	9.55	10.76	8.18	4.64	4.12
03/24/04	15.02	13.83	13.67	12.36	12.73	11.60	11.64	10.07	10.69	8.94	8.76	7.60	4.64	4.19
03/25/04	14.23	13.20	13.36	11.72	12.12	11.05	11.18	9.49	10.38	8.40	9.52	7.24	4.96	4.29
03/26/04	13.00	12.06	12.12	10.83	11.50	10.49	10.41	9.12	9.45	8.15	8.29	7.15	4.64	4.27
03/27/04	12.07	11.22	11.04	9.93	10.88	9.67	9.79	8.33	9.29	7.42	8.29	6.60	4.96	4.44
03/28/04	13.16	10.81	12.43	9.91	12.27	10.01	11.33	8.74	11.01	7.88	9.52	6.97	5.11	4.50
03/29/04	14.08	11.81	13.67	11.11	13.35	11.12	12.88	9.84	12.09	8.88	10.46	7.94	5.42	4.86
03/30/04	14.39	12.38	14.76	12.35	14.43	12.28	13.66	11.08	13.18	10.21	11.84	9.12	5.73	5.22
03/31/04	13.62	12.58	13.21	12.15	13.35	11.97	12.42	10.67	11.01	9.64	9.52	8.47	5.42	4.95
04/01/04	12.69	10.96	12.90	10.60	12.42	10.49	11.03	9.20	10.69	8.32	10.30	7.46	4.96	4.72
04/02/04	13.92	11.43	14.13	11.32	13.50	11.47	12.73	10.28	12.24	9.35	7.37	6.97	5.58	5.02
04/03/04	16.13	13.61	16.18	13.27	14.90	12.95	14.12	11.74	13.49	10.72			5.73	5.27
04/04/04	17.56	15.35	17.45	14.91	15.69	14.11	15.22	12.84	14.57	11.93			5.73	5.48

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
04/05/04	18.04	16.25	18.09	15.37	15.69	14.09	14.59	12.61	13.18	11.43			5.89	5.50
04/06/04	17.88	16.65	16.34	14.20	13.96	10.69	12.57	9.48	11.31	8.60			5.58	5.48
04/07/04	17.24	15.63	13.52	11.87	11.34	9.60	10.72	8.78	10.23	8.13	9.06	8.06	5.95	5.34
04/08/04	16.44	14.48	13.21	11.62	10.88	9.23	10.25	8.36	9.92	7.64	8.76	6.72	5.42	5.17
04/09/04	15.18	13.52	12.74	10.98	10.42	8.72	9.94	7.94	9.61	7.30	8.60	6.48	5.42	5.13
04/10/04	15.49	13.41	12.59	10.76	10.42	8.62	9.96	7.86	9.61	7.35	9.06	6.66	6.20	5.52
04/11/04	15.97	13.67	13.21	10.99	10.58	8.80	10.12	7.99	9.76	7.46	8.91	6.70	5.89	5.39
04/12/04	16.28	14.12	13.67	11.35	10.73	8.91	10.25	8.08	9.92	7.46	8.91	6.65	5.58	5.36
04/13/04	15.81	14.30	13.36	11.59	10.11	8.68	9.32	7.82	8.83	7.20	8.14	6.49	5.73	5.44
04/14/04	14.39	13.18	12.12	10.81	9.33	8.28	8.70	7.51	8.52	6.95	7.68	6.28	5.42	5.31
04/15/04	13.62	12.20	11.51	9.73	9.03	7.71	8.54	7.05	8.52	6.66	7.98	6.20	5.58	5.41
04/16/04	14.23	12.13	11.82	9.59	9.64	7.91	9.17	7.28	8.83	6.80	8.29	6.30	5.73	5.54
04/17/04	15.18	13.18	13.52	11.02	9.96	8.40	9.34	7.58	8.67	7.00	7.83	6.35	5.73	5.55
04/18/04	15.02	13.16	13.67	11.04	10.27	8.35	9.96	7.65	9.45	7.12	8.60	6.55	5.89	5.70
04/19/04	14.86	13.60	13.21	11.12	9.64	8.33	9.03	7.56	8.67	7.03	7.98	6.46	5.89	5.80
04/20/04	14.23	12.93	11.82	10.56	9.64	8.33	9.18	7.66	8.67	7.15	8.14	6.61	6.20	5.93
04/21/04	12.69	11.65	10.58	9.66	8.72	7.87	8.26	7.29	7.90	6.84	7.52	6.42	6.20	5.97
04/22/04	14.54	11.63	13.52	10.42	11.34	8.73	10.72	8.19	10.38	7.70	9.21	7.14	6.20	6.05
04/23/04	16.13	13.65	14.13	11.90	11.34	9.25	11.03	8.55	10.54	7.94	9.52	7.27	6.67	6.29
04/24/04	15.97	14.06	14.29	12.06	11.19	9.27	10.72	8.53	10.07	7.91	9.21	7.25	6.51	6.34
04/25/04	16.92	14.45	14.92	12.23	11.81	9.38	11.18	8.70	10.69	8.14	9.68	7.50	6.67	6.52
04/26/04	18.04	15.48	15.87	13.01	12.42	9.88	11.80	9.13	11.16	8.48	9.99	7.77	6.82	6.63
04/27/04	18.21	16.30	16.02	13.59	12.12	10.09	11.64	9.31	11.01	8.63	9.99	7.86	6.82	6.75
04/28/04	17.08	13.93	13.82	12.02	11.04	9.03	9.79	8.29	9.29	7.78	8.91	7.32	6.98	6.76
04/29/04	15.65	12.80	14.29	11.24	11.81	9.30	11.33	8.76	10.85	8.28	9.83	7.78	7.13	6.96
04/30/04	17.40	14.49	15.87	12.75	12.42	10.01	11.96	9.33	11.47	8.74	10.30	8.05	7.13	6.98
05/01/04	19.18	16.27	17.61	14.17	13.19	10.64	12.57	9.85	11.93	9.18	10.76	8.41	7.44	7.24
05/02/04	20.64	17.87	18.41	15.22	13.50	11.14	12.88	10.27	12.24	9.52	10.92	8.67	7.44	7.31
05/03/04	21.63	19.04	19.22	15.91	13.81	11.47	13.19	10.55	12.56	9.76	11.07	8.83	7.59	7.40
05/04/04	21.80	19.57	20.35	16.66	13.96	11.72	13.19	10.73	12.40	9.88	10.92	8.94	7.75	7.52
05/05/04	21.13	18.94	19.22	16.24	13.81	11.60	13.04	10.66	12.40	9.86	11.07	8.99	7.91	7.63
05/06/04	21.13	18.98	18.41	15.73	13.35	11.47	12.57	10.56	11.93	9.78	10.92	8.94	7.91	7.79
05/07/04	20.97	19.06	19.22	16.08	13.96	11.68	13.19	10.76	12.40	10.02	11.22	9.17	8.06	7.91

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
05/08/04	20.31	18.52	18.09	16.05	13.50	11.61	12.73	10.68	12.09	9.94	10.92	9.13	8.06	8.00
05/09/04	18.37	17.00	16.49	14.58	12.73	11.04	12.11	10.21	11.62	9.59	10.61	8.92	8.21	8.02
05/10/04	17.72	14.83	14.29	12.90	11.66	10.23	10.56	9.49	9.61	8.97	8.91	8.50	8.37	8.18
05/11/04	14.08	12.88	13.36	11.67	10.88	9.91	10.25	9.36	9.92	8.98	9.52	8.60	8.52	8.29
05/12/04	14.70	13.46	14.13	12.13	11.96	10.45	11.64	9.89	11.31	9.48	10.61	9.04	8.52	8.36
05/13/04	16.61	14.09	15.87	12.95	13.35	10.96	12.88	10.32	12.40	9.85	11.38	9.31	8.67	8.44
05/14/04	18.37	15.96	16.97	14.34	13.96	11.64	13.19	10.86	12.87	10.31	11.69	9.64	8.67	8.54
05/15/04	17.56	15.48	14.92	13.51	12.58	10.97	11.33	10.18	10.69	9.67	10.14	9.15	8.83	8.63
05/16/04	17.24	15.07	16.18	13.57	13.66	11.58	12.88	10.91	12.40	10.40	11.53	9.76	8.83	8.74
05/17/04	16.44	15.46	15.55	13.90	13.04	11.48	12.57	10.71	12.09	10.19	11.22	9.60	8.83	8.79
05/18/04	16.28	15.17	14.44	13.46	12.12	11.13	11.33	10.42	10.85	9.96	10.30	9.46	9.13	8.93
05/19/04	16.44	15.22	15.55	13.60	13.66	11.79	13.04	11.12	12.56	10.62	11.69	10.02	9.13	8.94
05/20/04	18.21	16.00	17.29	14.82	14.58	12.36	13.81	11.54	13.33	10.95	12.47	10.25	9.13	9.01
05/21/04	17.40	16.81	16.49	15.21	13.50	12.37	12.88	11.45	12.24	10.78	11.38	10.01	9.29	9.10
05/22/04	17.72	16.41	16.49	14.81	13.66	11.96	12.88	11.13	12.24	10.53	11.53	9.97	9.44	9.20
05/23/04	17.24	15.94	15.71	14.03	13.35	11.74	12.88	11.02	12.56	10.52	11.69	10.00	9.44	9.24
05/24/04	17.88	15.69	16.97	14.29	14.43	12.17	13.81	11.44	13.33	10.95	12.47	10.38	9.59	9.35
05/25/04	19.02	16.87	17.77	15.29	14.90	12.69	14.28	11.90	13.79	11.32	12.78	10.63	9.75	9.46
05/26/04	18.04	16.96	15.87	14.88	13.66	12.02	12.42	11.15	11.47	10.58	10.76	10.04	9.59	9.50
05/27/04	17.24	16.56	15.55	14.35	13.04	12.21	12.57	11.51	12.24	11.00	11.69	10.40	9.75	9.59
05/28/04	16.61	15.86	14.76	13.85	12.89	12.07	12.57	11.45	12.24	11.00	11.69	10.37	9.91	9.64
05/29/04	15.97	14.77	14.44	13.12	13.04	11.58	12.42	10.55	12.09	10.63	11.53	10.23	9.91	9.70
05/30/04	17.88	15.87	16.49	13.98	14.90	12.29	16.65	11.80	13.79	11.29	12.78	10.76	9.91	9.80
05/31/04	18.86	17.02	17.45	15.35	15.22	13.00	17.92	13.80	14.11	11.73	12.93	11.05	10.07	9.93
06/01/04	19.83	18.01	18.41	16.06	15.69	13.45	19.22	13.91	14.57	12.06	13.39	11.30	10.07	9.94
06/02/04	20.97	18.86	19.06	16.78	16.16	13.76	15.54	12.93	14.89	12.26	13.70	11.43	10.22	10.03
06/03/04	22.30	20.08	19.54	17.51	16.47	14.13	15.54	13.17	14.89	12.44	13.70	11.60	10.22	10.09
06/04/04	23.31	20.94	20.84	18.28	16.79	14.44	16.02	13.48	15.37	12.72	14.01	11.80	10.22	10.17
06/05/04	23.13	21.47	20.35	18.36	16.32	14.36	15.54	13.37	14.89	12.65	13.54	11.72	10.38	10.21
06/06/04	21.63	19.82	19.72	17.53	16.01	14.05	15.38	13.14	14.42	12.43	13.54	11.59	10.38	10.27
06/07/04	19.51	17.93	17.79	16.00	14.58	13.09	13.97	12.27	13.49	11.72	12.62	11.11	10.38	10.28
06/08/04	20.31	18.06	18.59	16.03	15.84	13.48	15.22	12.76	14.73	12.22	13.70	11.53	10.53	10.36
06/09/04	19.18	18.01	16.83	15.64	14.58	12.86	13.19	12.12	12.71	11.64	12.31	11.13	10.53	10.40

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
06/10/04	17.72	16.24	15.24	14.02	13.50	12.47	12.88	11.81	12.40	11.40	12.00	10.92	10.53	10.44
06/11/04	19.51	16.87	17.95	15.19	15.69	13.24	15.22	12.64	14.73	12.20	13.70	11.60	10.69	10.50
06/12/04	20.15	18.06	18.11	16.09	15.53	13.54	15.07	12.80	14.57	12.28	13.70	11.61	10.69	10.55
06/13/04	22.30	19.59	20.04	17.40	16.47	14.23	15.86	13.43	15.37	12.81	14.01	11.99	10.84	10.60
06/14/04	21.80	19.79	19.88	17.47	16.16	14.15	15.54	13.30	15.05	12.67	13.85	11.88	10.84	10.64
06/15/04	20.64	18.89	19.40	16.79	15.84	13.84	15.38	13.06	14.89	12.48	13.85	11.75	10.84	10.68
06/16/04	20.97	18.30	18.92	16.28	16.16	13.73	15.54	13.00	15.05	12.48	14.01	11.82	11.00	10.76
06/17/04	22.13	19.44	20.04	17.15	16.63	14.18	16.02	13.40	15.37	12.77	14.16	12.02	11.00	10.79
06/18/04	20.97	19.47	18.76	16.89	15.22	13.65	14.59	12.84	13.95	12.28	13.24	11.63	11.00	10.83
06/19/04	22.63	19.87	20.04	17.30	16.79	14.26	16.18	13.54	15.53	12.98	14.32	12.22	11.00	10.90
06/20/04	22.47	20.35	20.21	17.83	16.32	14.27	15.70	13.42	15.21	12.81	14.01	12.05	11.16	10.91
06/21/04	23.13	20.61	20.53	17.78	16.47	14.28	15.86	13.48	15.21	12.89	14.01	12.14	11.16	11.04
06/22/04	23.82	21.36	19.08	17.37	16.79	14.30	16.18	13.60	15.53	13.07	14.32	12.34	11.31	11.15
06/23/04	23.48	21.71	18.92	17.53	16.79	14.43	16.18	13.71	15.68	13.13	14.47	12.38	11.31	11.22
06/24/04	24.34	22.09	19.08	17.62	16.16	14.22	15.54	13.54	15.05	13.01	13.85	12.35	11.46	11.25
06/25/04	24.34	22.07	20.21	18.10	17.27	14.79	16.49	14.10	15.84	13.52	14.63	12.72	11.46	11.40
06/26/04	24.68	22.71	20.53	18.74	17.27	14.94	16.65	14.19	16.00	13.58	14.63	12.77	11.62	11.49
06/27/04	24.51	22.47	20.37	18.70	17.11	14.99	16.65	14.26	16.00	13.65	14.78	12.87	11.77	11.58
06/28/04	24.17	22.47	19.88	18.50	16.63	14.80	16.02	14.06	15.53	13.48	14.78	12.75	11.77	11.64
06/29/04	23.64	21.90	19.56	17.95	16.79	14.80	16.49	14.17	16.00	13.61	14.94	12.80	11.93	11.71
06/30/04	22.30	20.51	19.24	17.34	16.94	14.79	16.49	14.15	16.00	13.59	15.10	12.89	11.93	11.82
07/01/04	22.80	20.70	19.88	18.00	17.58	15.03	16.81	14.28	16.16	13.67	15.10	12.97	12.08	11.88
07/02/04	23.82	21.63	20.04	18.51	17.58	15.24	16.81	14.50	16.32	13.94	15.10	13.19	12.08	11.97
07/03/04	22.97	21.66	19.56	18.13	16.79	14.90	16.02	14.18	15.68	13.68	14.63	13.03	12.08	12.02
07/04/04	23.13	21.42	19.72	18.07	17.42	15.16	16.81	14.46	16.32	13.95	15.10	13.22	12.23	12.06
07/05/04	22.80	20.97	19.40	17.83	17.42	15.01	16.81	14.36	16.32	13.86	15.26	13.20	12.23	12.15
07/06/04	23.13	21.35	19.08	17.84	17.11	15.08	16.49	14.40	16.00	13.88	14.94	13.21	12.23	12.22
07/07/04	22.97	21.41	19.72	17.98	17.58	15.29	16.81	14.57	16.48	14.05	15.26	13.38	12.39	12.30
07/08/04	21.97	19.96	18.92	17.34	17.11	14.93	16.65	14.24	16.16	13.79	15.26	13.21	12.39	12.32
07/09/04	21.80	19.91	17.95	16.92	16.32	14.72	15.70	14.04	15.21	13.60	14.32	13.06	12.54	12.43
07/10/04	22.80	20.55	19.40	17.53	17.58	15.35	16.81	14.67	16.32	14.20	15.26	13.56	12.54	12.47
07/11/04	22.63	20.71	19.56	18.06	17.58	15.37	16.97	14.68	16.63	14.19	15.57	13.55	12.70	12.52
07/12/04	23.31	21.03	19.88	18.16	18.07	15.57	17.44	14.89	16.95	14.41	15.73	13.74	12.86	12.66

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
07/13/04	24.51	22.07	20.69	18.96	18.39	16.05	17.76	15.28	17.11	14.71	15.89	13.96	12.86	12.75
07/14/04	25.03	22.79	20.86	19.29	18.39	16.10	17.76	15.34	17.27	14.78	16.21	14.04	12.86	12.80
07/15/04	24.68	22.92	20.35	19.18	18.07	16.11	17.44	15.32	16.79	14.76	15.89	14.01	13.01	12.92
07/16/04	25.03	23.02	20.68	19.22	18.55	16.32	17.92	15.55	17.27	14.95	14.01	13.21	13.40	13.05
07/17/04	25.73	23.90	21.67	19.93	18.39	16.47	17.44	15.60	16.95	15.01			13.40	13.23
07/18/04	24.51	22.86	20.03	19.24	17.42	15.87	15.86	15.03	15.21	14.52			13.40	13.27
07/19/04	24.17	22.20	20.51	18.62	18.71	16.17	17.92	15.50	17.27	15.03			13.56	13.38
07/20/04	24.68	22.63	20.84	19.39	18.71	16.56	18.08	15.84	17.43	15.31			13.71	13.48
07/21/04	24.68	23.04	21.01	19.55	19.03	16.67	18.24	15.87	17.75	15.32			13.71	13.55
07/22/04	24.17	22.58	20.84	19.45	18.71	16.57	18.08	15.80	17.59	15.28			13.71	13.62
07/23/04	24.17	22.37	20.84	19.35	18.87	16.59	18.24	15.83	17.75	15.32			13.86	13.70
07/24/04	24.51	22.59	21.01	19.53	19.03	16.73	18.41	15.96	17.91	15.44			13.86	13.77
07/25/04	24.68	23.24	21.33	20.05	18.87	16.88	18.24	16.11	17.59	15.55			14.02	13.84
07/26/04	25.03	23.26	20.68	19.62	18.07	16.44	17.44	15.71	16.95	15.25			14.02	13.92
07/27/04	24.17	22.58	20.68	19.21	18.87	16.77	18.24	16.04	17.75	15.56			14.17	14.02
07/28/04	24.17	22.31	20.51	19.21	18.71	16.70	18.24	15.98	17.75	15.52			14.17	14.09
07/29/04	24.17	22.35	20.68	19.17	18.87	16.72	18.24	16.03	17.75	15.56			14.33	14.17
07/30/04	24.34	22.43	20.68	19.14	19.03	16.80	18.41	16.11	17.91	15.67			14.33	14.22
07/31/04	24.68	22.70	21.01	19.54	19.19	17.05	18.57	16.32	18.23	15.86			14.48	14.31
08/01/04	25.21	23.10	21.33	19.90	19.36	17.23	18.57	16.47	18.23	15.96			14.64	14.39
08/02/04	25.21	23.36	21.50	20.17	19.03	17.32	18.57	16.57	18.07	16.08			14.64	14.47
08/03/04	24.68	22.96	20.84	19.62	19.19	17.17	18.57	16.45	18.23	16.01			14.64	14.53
08/04/04	24.17	22.37	20.51	19.24	19.19	17.09	18.73	16.42	18.23	16.01	17.47	16.27	14.80	14.64
08/05/04	23.82	22.16	20.35	19.30	19.19	17.16	18.57	16.49	18.23	16.09	17.47	15.59	14.96	14.70
08/06/04	23.48	22.00	20.19	19.14	18.71	16.98	18.24	16.33	18.07	15.98	17.31	15.54	14.96	14.83
08/07/04	22.63	21.13	19.87	18.68	18.71	16.89	18.24	16.32	18.07	16.01	17.31	15.59	14.96	14.88
08/08/04	22.47	20.65	19.87	18.42	19.03	16.86	18.73	16.34	18.39	16.07	17.63	15.70	15.28	15.08
08/09/04	22.80	20.75	20.03	18.64	19.36	17.18	19.06	16.62	18.72	16.32	17.95	15.89	15.28	15.11
08/10/04	23.48	21.49	20.51	19.24	19.68	17.50	19.22	16.90	18.88	16.56	18.11	16.08	15.44	15.26
08/11/04	23.99	22.02	20.84	19.58	19.84	17.72	19.38	17.09	19.04	16.74	18.27	16.23	15.59	15.39
08/12/04	24.17	22.28	21.01	19.67	19.84	17.74	19.38	17.14	19.04	16.79	18.27	16.31	15.59	15.49
08/13/04	23.82	22.33	21.19	19.92	19.68	17.82	19.38	17.22	19.04	16.89	18.27	16.41	15.76	15.57
08/14/04	23.13	22.42	20.86	20.02	19.19	17.90	18.73	17.24	18.39	16.88	17.79	16.39	15.91	15.70

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
08/15/04	23.64	22.12	20.86	19.85	19.68	17.92	19.22	17.35	18.88	17.02	18.11	16.56	15.91	15.81
08/16/04	23.13	22.28	20.86	20.20	19.19	17.99	18.89	17.41	18.72	17.08	17.95	16.63	16.07	15.90
08/17/04	22.47	21.73	20.37	19.62	18.55	17.64	18.08	17.09	18.07	16.83	17.47	16.50	16.23	16.02
08/18/04	23.48	21.83	21.19	19.77	20.48	18.38	20.03	17.88	19.70	17.54	18.92	17.07	16.23	16.14
08/19/04	23.64	22.26	21.53	20.43	20.48	18.68	20.03	18.05	19.86	17.66	19.08	17.15	16.39	16.24
08/20/04	23.82	22.25	22.53	20.74	20.81	18.94	20.36	18.23	20.03	17.82	19.24	17.28	16.54	16.37
08/21/04	23.48	22.12	22.36	20.68	20.64	18.89	20.03	18.16	19.86	17.75	19.08	17.23	16.54	16.47
08/22/04	22.63	20.51	20.86	19.47	19.68	17.91	18.57	17.27	17.75	16.97	17.31	16.70	16.71	16.52
08/23/04	19.83	18.62	19.56	18.16	19.36	17.73	19.06	17.37	19.21	17.25	18.92	17.12	16.86	16.66
08/24/04	19.83	18.54	19.40	18.15	19.03	17.75	18.73	17.28	18.88	17.13	18.59	16.97	16.86	16.76
08/25/04	19.83	18.87	19.56	18.40	19.03	18.07	18.73	17.59	18.72	17.41	18.43	17.20	17.02	16.85
08/26/04	19.34	18.40	19.24	18.03	19.19	17.76	19.06	17.44	19.21	17.36	19.08	17.22	17.18	17.00
08/27/04	20.15	18.48	19.72	18.05	19.84	18.00	19.87	17.66	19.86	17.60	19.56	17.47	17.34	17.13
08/28/04	20.64	18.87	20.53	18.64	20.16	18.37	20.03	17.98	20.03	17.86	19.56	17.64	17.50	17.23
08/29/04	21.47	19.56	21.19	19.25	20.64	18.78	20.36	18.35	20.35	18.18	19.89	17.88	17.66	17.34
08/30/04	21.80	19.94	21.53	19.62	20.97	19.07	20.84	18.61	20.67	18.42	20.05	18.06	17.66	17.43
08/31/04	22.13	20.31	22.19	20.09	21.30	19.36	21.01	18.84	20.84	18.58	20.21	18.17	17.82	17.54
09/01/04	21.97	20.57	21.86	20.26	20.64	19.39	20.52	18.82	20.35	18.54	19.89	18.18	17.82	17.63
09/02/04	20.31	18.39	19.88	18.66	19.84	18.04	19.06	17.63	18.88	17.51	18.76	17.46	17.82	17.64
09/03/04	18.21	16.83	18.73	16.90	19.03	17.35	19.22	17.19	19.37	17.29	19.24	17.48	17.98	17.76
09/04/04	19.02	17.14	19.38	17.21	19.68	17.90	19.71	17.71	20.03	17.81	19.73	17.87	18.14	17.89
09/05/04	19.18	17.72	19.71	17.68	19.68	18.25	19.71	18.00	20.03	18.04	19.73	17.99	18.14	17.90
09/06/04	19.34	17.70	19.22	17.51	20.00	18.22	20.03	18.02	20.35	18.08	20.05	18.09	18.31	18.04
09/07/04	19.34	17.75	19.71	17.76	20.16	18.52	20.19	18.28	20.35	18.29	20.21	18.22	18.31	18.08
09/08/04	19.99	18.24	20.35	18.28	20.48	18.87	20.52	18.61	20.51	18.54	20.21	18.39	18.31	18.07
09/09/04	20.15	18.64	20.35	18.59	20.32	18.91	20.19	18.59	20.35	18.51	20.21	18.34	18.47	18.07
09/10/04	20.31	18.82	21.01	18.69	20.32	18.94	20.36	18.65	20.51	18.57	20.05	18.40	18.63	18.13
09/11/04	19.99	18.72	20.35	18.56	20.32	18.90	20.36	18.58	20.19	18.48	19.89	18.30	18.63	18.08
09/12/04	19.51	18.54	19.06	18.04	19.84	18.30	19.38	17.91	18.88	17.83	18.27	17.77	18.14	17.93
09/13/04	18.04	16.94	17.45	16.68	18.23	17.49	18.24	17.34	18.39	17.45	18.43	17.63	18.14	17.89
09/14/04	17.72	16.45	17.77	16.30	18.71	17.49	18.89	17.42	19.21	17.56	19.24	17.70	18.31	17.89
09/15/04	16.92	16.04	16.97	16.22	18.07	17.37	18.08	17.20	18.23	17.28	18.27	17.38	17.82	17.71
09/16/04	17.40	15.99	18.57	16.78	19.36	17.86	19.38	17.74	19.54	17.78	19.56	17.83	18.14	17.73

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
09/17/04	17.88	16.86	18.73	17.38	19.36	18.08	19.55	17.85	19.70	17.83	19.56	17.78	18.14	17.66
09/18/04	17.72	16.72	17.77	16.83	18.55	17.08	18.08	16.79	17.75	16.76	17.31	16.86	17.50	17.42
09/19/04	16.44	15.54	16.49	15.61	18.07	16.68	18.08	16.61	18.07	16.73	18.11	16.91	17.50	17.34
09/20/04	15.97	14.96	16.18	15.29	17.74	16.40	17.92	16.38	18.07	16.53	18.27	16.77	17.50	17.22
09/21/04	15.81	14.63	15.87	14.99	17.42	16.21	17.61	16.14	17.91	16.30	18.11	16.59	17.34	17.06
09/22/04	16.28	14.81	16.34	15.12	18.07	16.53	18.24	16.46	18.39	16.58	18.43	16.75	17.34	16.94
09/23/04	17.40	15.89	17.45	16.29	18.55	17.30	18.57	17.13	18.72	17.10	18.59	17.04	17.34	16.89
09/24/04	18.04	16.67	17.93	16.79	18.87	17.44	18.73	17.20	18.88	17.12	18.76	17.01	17.18	16.78
09/25/04	18.21	16.83	18.57	17.01	18.87	17.48	18.89	17.22	19.04	17.12	18.76	16.98	17.18	16.75
09/26/04	18.21	16.89	18.73	17.02	18.71	17.53	18.73	17.25	18.88	17.15	18.59	16.99	17.18	16.74
09/27/04	18.53	17.10	19.06	17.30	18.87	17.71	18.73	17.36	18.88	17.20	18.59	16.97	17.02	16.62
09/28/04	18.53	17.17	18.73	17.20	18.71	17.55	18.57	17.21	18.56	17.04	18.43	16.85	17.02	16.59
09/29/04	18.53	17.25	18.41	17.06	18.39	17.36	18.41	17.00	18.23	16.81	17.95	16.61	16.86	16.46
09/30/04	18.04	16.79	17.93	16.77	18.23	17.10	18.08	16.80	18.23	16.69	18.11	16.60	16.86	16.39
10/01/04	17.72	16.60	17.61	16.49	18.07	16.92	17.92	16.60	17.91	16.44	17.79	16.31	16.54	16.03
10/02/04	17.56	16.39	17.61	16.39	17.91	16.75	17.76	16.41	17.91	16.26	17.63	16.12	16.39	15.90
10/03/04	17.40	16.19	17.29	16.17	17.58	16.54	17.44	16.17	17.43	16.00	17.31	15.86	16.07	15.66
10/04/04	17.08	15.94	17.29	15.93	17.27	16.27	17.28	15.92	17.27	15.76	17.15	15.67	15.91	15.48
10/05/04	16.61	15.53	16.65	15.51	16.79	15.94	16.65	15.57	16.79	15.40	16.67	15.29	15.59	15.18
10/06/04	15.81	14.88	15.87	14.93	16.32	15.42	16.02	15.02	15.84	14.81	15.89	14.77	15.28	14.88
10/07/04	17.08	15.66	16.81	15.64	16.94	15.89	16.65	15.56	16.63	15.38	16.52	15.22	15.12	14.74
10/08/04	16.92	15.78	16.65	15.65	16.79	15.73	16.49	15.32	16.48	15.09	16.21	14.88	14.96	14.61
10/09/04	16.44	15.70	16.18	15.42	16.47	15.36	16.02	14.89	15.68	14.67	15.41	14.53	14.64	14.36
10/10/04	15.02	13.86	14.60	13.50	14.90	13.90	14.75	13.64	14.89	13.62	15.26	13.78	14.64	14.14
10/11/04	14.23	13.18	14.13	12.96	14.90	13.92	14.91	13.67	14.89	13.62	15.03	13.72	14.33	13.97
10/12/04	14.23	13.20	14.29	13.09	15.06	14.08	14.91	13.79	15.05	13.71	15.03	13.75	14.17	13.85
10/13/04	14.70	13.60	15.07	13.64	15.22	14.28	15.22	13.95	15.21	13.78	15.03	13.71	14.17	13.65
10/14/04	15.18	13.90	15.39	13.79	15.22	14.17	15.22	13.82	15.21	13.64	15.03	13.59	14.02	13.57
10/15/04	15.02	14.03	15.07	13.73	15.37	14.31	15.22	13.97	15.21	13.76	14.87	13.65	13.86	13.45
10/16/04	15.02	13.98	15.07	13.80	15.53	14.56	15.07	14.06	15.05	13.63	14.72	13.39	13.71	13.28
10/17/04	14.54	13.85	14.44	13.90	15.06	14.48	14.59	13.88	13.79	13.42	13.79	13.18	13.56	13.26
10/18/04	13.62	12.66	13.36	12.85	14.12	13.35	13.51	12.80	12.87	12.43	13.02	12.44	13.56	13.18
10/19/04	12.53	11.64	12.43	11.64	13.19	12.49	12.57	11.95	12.09	11.54	12.24	11.60	12.93	12.80

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
10/20/04	13.62	12.34	13.21	12.27	13.96	12.89	13.51	12.42	13.02	12.06	13.02	12.05	13.09	12.79
10/21/04	13.16	12.56	12.59	12.15	13.19	12.60	12.73	12.12	12.56	11.75	12.71	11.84	12.93	12.52
10/22/04	12.69	12.07	12.28	11.66	13.04	12.45	12.57	11.94	11.93	11.49	12.24	11.59	12.47	12.20
10/23/04	12.22	11.86	11.66	11.47	12.73	12.19	12.27	11.55	11.47	10.99	11.47	11.10	12.00	11.74
10/24/04	12.22	11.33	11.20	10.58	12.58	11.47	12.11	10.90	11.31	10.38	11.93	10.62	11.84	11.57
10/25/04	11.29	10.51	10.43	9.78	11.66	10.92	11.33	10.36	10.85	9.80	11.32	10.05	11.69	11.25
10/26/04	10.67	10.30	10.43	9.99	12.12	11.37	11.49	10.68	10.69	9.93	10.85	9.89	11.53	11.36
10/27/04	12.07	11.05	11.66	11.03	12.73	12.02	12.11	11.38	11.62	10.73	11.47	10.67	11.69	11.44
10/28/04	12.07	11.76	11.66	11.31	12.58	11.90	11.96	11.17	11.16	10.46	11.01	10.43	11.53	11.05
10/29/04	11.91	11.46	10.89	10.65	11.81	11.27	11.03	10.65	10.38	10.01	10.54	10.14	10.76	10.56
10/30/04	11.29	10.84	10.43	10.08	11.50	11.00	10.87	10.33	10.07	9.65	10.08	9.70	10.61	10.29
10/31/04	10.36	9.66	9.96	9.03	10.88	10.01	10.25	9.36	9.45	8.70	9.92	8.85	10.45	10.28
11/01/04	9.74	8.91	9.03	7.97	9.80	8.97	9.17	8.34	8.98	7.87	9.46	8.30	10.45	9.94
11/02/04	9.89	9.39	9.64	8.58	10.73	9.69	10.25	9.18	9.29	8.73	9.46	8.76	10.76	9.92
11/03/04	9.89	9.61	9.34	9.03	9.80	9.59	9.32	9.16	9.29	8.90	9.46	8.99		
11/04/04	10.36	9.47	9.96	9.10	10.88	10.00	10.56	9.62	9.92	9.08	10.08	9.20		
11/05/04	10.36	9.54	9.80	8.87	11.19	10.11	10.56	9.50	9.61	8.75	10.23	8.76		
11/06/04	9.58	9.13	8.88	8.52	10.58	9.88	10.25	9.24	9.61	8.52	9.92	8.70		
11/07/04	9.27	9.05	8.88	8.57	10.42	9.85	9.94	9.23	9.29	8.60	9.61	8.73		
11/08/04	9.27	9.12	8.72	8.50	10.27	9.64	9.63	8.98	8.52	8.27	8.69	8.43	8.98	8.78
11/09/04	9.58	9.29	9.03	8.50	10.27	9.61	9.94	9.03	9.14	8.32	9.31	8.39	8.67	8.51
11/10/04	9.89	9.58	9.34	8.86	10.58	9.99	10.09	9.27	9.14	8.51	9.15	8.44	8.83	8.43
11/11/04	10.83	10.41	9.96	9.57	10.88	10.35	10.25	9.73	9.45	8.96	9.31	8.84	8.37	8.05
11/12/04	11.44	10.79	10.89	10.03	11.04	10.56	10.41	9.81	9.29	8.91	8.84	8.53	8.21	7.97
11/13/04	11.14	10.87	9.96	9.63	10.27	9.88	9.63	9.00	8.52	8.12	8.22	8.00	8.06	8.00
11/14/04	10.83	10.51	9.80	9.33	10.27	9.70	9.63	8.88	8.52	8.07	8.38	7.96	8.21	8.04
11/15/04	10.21	9.73	9.18	8.65	9.80	9.10	9.17	8.33	8.37	7.52	8.38	7.46	8.37	8.17
11/16/04	10.21	9.79	9.49	8.94	9.96	9.37	9.32	8.58	8.37	7.77	8.22	7.79	8.06	8.06
11/17/04	9.74	9.35	8.72	8.36	9.33	8.89	8.54	8.05	7.74	7.21	7.92	7.29	8.06	7.96
11/18/04	9.74	9.53	9.03	8.53	9.80	9.13	9.32	8.40	8.37	7.59	8.53	7.59	8.12	7.85
11/19/04	8.81	8.17	8.42	7.26	8.88	8.19	8.39	7.56	7.59	6.78	7.76	6.97	7.97	7.66
11/20/04	7.57	6.90	6.87	6.14	8.11	7.20	7.31	6.41	6.19	5.61	6.68	5.91	7.66	7.38
11/21/04	6.80	6.12	5.94	5.17	7.03	6.27	6.69	5.56	5.72	4.80	6.37	5.25	7.50	7.17

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
11/22/04	6.64	6.14	5.94	5.24	7.50	6.57	6.84	5.83	6.03	5.06	6.22	5.49	7.35	7.07
11/23/04	7.57	6.86	6.56	5.64	7.50	6.70	6.84	5.96	6.35	5.17	6.68	5.53	7.35	7.09
11/24/04	7.73	7.26	7.18	6.41	8.42	7.54	7.77	6.80	6.66	5.98	6.53	6.19	7.19	6.94
11/25/04	8.50	8.03	7.64	7.09	8.57	7.91	8.08	7.20	6.97	6.41	6.84	6.44	7.04	6.94
11/26/04	8.34	7.96	7.49	6.88	7.96	7.41	7.62	6.73	6.66	5.99	7.14	6.14	7.19	6.89
11/27/04	7.73	7.39	6.56	6.20	7.50	6.96	6.84	6.22	5.72	5.39	6.07	5.61	6.88	6.62
11/28/04	6.64	5.73	5.63	4.87	6.88	5.56	5.91	4.81	4.63	3.96	5.29	4.31	6.73	6.43
11/29/04	5.24	4.63	4.38	3.61	5.64	4.74	4.98	4.00	4.01	3.25	4.66	3.82	6.42	6.19
11/30/04	4.77	4.41	3.76	3.25	5.18	4.55	4.51	3.85	3.53	3.07	3.88	3.62	6.11	5.93
12/01/04	5.55	4.92	4.38	3.87	5.80	5.12	5.44	4.55	4.63	3.80	4.98	4.33	6.11	5.93
12/02/04	5.39	5.12	4.86	4.34	6.11	5.73	5.60	5.06	4.63	4.26	4.82	4.62	5.95	5.83
12/03/04	6.02	5.77	5.01	4.65	6.11	5.65	5.44	4.96	4.47	4.13	4.66	4.38	5.79	5.70
12/04/04	5.71	5.09	4.70	3.87	5.64	4.82	5.13	4.18	4.01	3.39	4.66	3.75	5.79	5.50
12/05/04	4.77	4.38	4.07	3.43	5.80	4.67	4.98	4.01	4.01	3.23	4.35	3.69	5.63	5.30
12/06/04	5.86	5.25	5.01	4.42	6.11	5.53	5.29	4.81	4.32	3.91	4.51	4.17	5.32	5.27
12/07/04	7.11	6.47	6.10	5.36	6.88	6.29	6.22	5.48	5.10	4.56	5.13	4.54	5.48	5.23
12/08/04	7.42	7.10	6.10	5.82	7.19	6.68	6.22	5.73	5.10	4.85	4.82	4.75	5.17	5.17
12/09/04	8.50	7.93	7.03	6.59	7.96	7.13	7.00	6.33	6.03	5.47	5.76	5.29	5.32	5.20
12/10/04	9.58	9.01	8.72	7.95	9.33	8.45	8.54	7.62	7.59	6.70	7.46	6.35	5.63	5.29
12/11/04	9.74	9.62	8.72	8.45	9.18	8.78	8.39	7.82	7.13	6.84	6.68	6.40	5.32	5.25
12/12/04	9.43	9.09	8.57	8.13	8.88	8.16	7.62	7.02	6.51	5.96	5.76	5.60	5.32	5.21
12/13/04	8.96	8.68	8.11	7.43	8.27	7.70	7.31	6.61	6.19	5.60	6.07	5.33	5.48	5.21
12/14/04	8.50	8.07	7.18	6.76	7.81	7.29	7.00	6.27	5.88	5.30	5.60	5.09	5.32	5.09
12/15/04	7.73	7.19	6.56	5.87	7.19	6.53	6.22	5.43	5.26	4.52	5.29	4.44	5.32	4.99
12/16/04	7.11	6.58	5.79	5.41	6.88	6.25	6.07	5.22	4.94	4.26	4.98	4.24	5.17	4.88
12/17/04	7.11	6.79	5.94	5.59	6.88	6.35	5.76	5.30	4.63	4.32	4.51	4.26	4.85	4.75
12/18/04	6.96	6.90	5.79	5.58	6.73	6.35	5.76	5.20	4.47	4.18	4.51	4.14	5.01	4.69
12/19/04	6.80	6.56	5.63	5.32	6.42	6.02	5.60	4.96	4.32	4.01	4.35	4.04	4.69	4.60
12/20/04	6.49	6.29	5.17	4.79	6.26	5.68	5.44	4.67	4.16	3.72	4.19	3.75	4.69	4.51
12/21/04	5.71	5.17	4.38	3.74	5.64	4.80	4.35	3.53	3.22	2.57	3.26	2.74	4.38	4.24
12/22/04	6.02	5.31	4.23	3.58	5.96	5.11	4.35	3.44	3.37	2.53	3.57	2.76	4.54	4.16
12/23/04	5.24	4.60	3.44	2.98	5.49	4.83	3.88	3.11	2.74	2.22	3.09	2.47	4.07	3.93
12/24/04	4.62	4.12	3.60	2.81	5.96	4.94	4.19	3.17	3.06	2.33	3.57	2.57	4.07	3.83

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
12/25/04	4.77	4.11	3.60	2.91	5.64	4.82	4.04	3.11	3.22	2.36	3.41	2.62	4.07	3.73
12/26/04	4.93	4.47	3.92	3.36	5.96	5.20	4.67	3.63	3.37	2.82	3.41	2.97	3.91	3.65
12/27/04	5.39	4.75	4.23	3.54	6.42	5.52	4.98	3.84	3.84	2.98	3.88	3.02	3.91	3.61
12/28/04	5.39	4.80	4.38	3.64	6.57	5.55	4.82	3.93	3.69	3.04	3.73	3.11	3.75	3.53
12/29/04	6.18	5.68	4.86	4.40	6.88	6.29	5.29	4.70	4.16	3.78	3.88	3.64	3.75	3.54
12/30/04	6.33	5.98	5.32	4.67	6.73	6.17	5.13	4.53	4.01	3.56	3.88	3.38	3.59	3.46
12/31/04	6.02	5.69	4.86	4.31	6.42	5.76	4.67	4.01	3.53	3.01	3.26	2.90	3.59	3.35
01/01/05	5.86	5.63	4.38	4.05	6.26	5.46	4.19	3.66	3.22	2.71	3.41	2.69	3.59	3.28
01/02/05	5.39	5.09	4.23	3.62	5.96	5.18	4.35	3.43	3.22	2.51	3.41	2.54	3.44	3.16
01/03/05	5.24	4.69	3.92	3.37	5.80	5.26	4.35	3.58	3.22	2.62	3.09	2.64	3.12	3.00
01/04/05	4.62	4.03	3.44	2.91	5.64	4.67	3.57	2.94	2.27	1.93	2.31	2.05	2.96	2.80
01/05/05	3.52	3.08	2.50	2.01	4.87	3.93	2.93	2.27	1.79	1.31	1.99	1.62	2.96	2.84
01/06/05	3.83	3.42	2.50	2.09	4.56	3.94	2.77	2.27	1.63	1.30	1.83	1.57	2.81	2.75
01/07/05	3.68	3.48	2.66	2.35	4.71	4.25	3.09	2.65	1.94	1.65	1.83	1.63	2.64	2.47
01/08/05	4.46	3.82	3.44	2.82	5.49	4.58	3.57	2.82	2.27	1.83	2.31	1.82	2.64	2.53
01/09/05	5.55	4.75	4.54	3.52	6.26	5.19	4.82	3.51	3.53	2.53	3.26	2.34	2.81	2.56
01/10/05	5.71	5.18	4.70	3.78	6.26	5.26	4.35	3.42	3.06	2.37	3.09	2.20	2.64	2.37
01/11/05	5.86	5.31	4.38	3.72	5.64	5.07	4.04	3.26	2.90	2.20	2.62	2.14	2.49	2.32
01/12/05	4.93	4.40	3.76	3.05	5.18	4.47	3.72	2.71	2.42	1.65	2.14	1.56	2.49	2.33
01/13/05	4.93	4.25	3.44	2.66	4.87	4.08	3.41	2.45	2.42	1.48	2.62	1.57	2.64	2.27
01/14/05	4.46	3.93	3.13	2.36	4.87	4.07	3.25	2.35	2.11	1.34	2.31	1.44	2.17	1.88
01/15/05	4.14	3.67	2.97	2.27	5.02	3.99	3.41	2.18	2.11	1.17	2.14	1.26	2.01	1.76
01/16/05	4.93	4.42	3.44	2.95	5.33	4.43	3.57	2.68	2.27	1.67	1.99	1.66	2.01	1.89
01/17/05	5.39	5.10	4.23	3.60	6.26	5.23	4.51	3.38	3.22	2.37	2.94	2.21	2.33	2.08
01/18/05	6.96	6.17	5.94	4.79	7.03	6.13	5.60	4.43	4.32	3.38	3.88	3.00	2.49	2.09
01/19/05	6.80	6.38	5.17	4.78	6.73	5.98	5.13	4.30	4.01	3.21	3.73	2.84	2.64	2.09
01/20/05	6.33	6.25	5.32	4.86	6.57	5.86	4.98	4.23	3.69	3.15	3.41	2.90	2.33	2.10
01/21/05	6.18	6.01	4.86	4.50	6.42	5.64	4.51	3.86	3.06	2.73	2.62	2.50	2.17	2.08
01/22/05	5.86	5.72	4.70	4.39	5.96	5.42	4.19	3.64	2.90	2.55	2.78	2.36	2.17	2.06
01/23/05	6.33	6.06	5.32	4.52	6.11	5.44	4.35	3.61	2.90	2.52	2.78	2.31	2.17	2.02
01/24/05	6.33	6.14	4.07	3.86	5.64	4.84	3.57	2.89	2.42	1.80	2.31	1.74	2.17	1.91
01/25/05	6.18	5.91	4.70	4.00	5.64	5.11	4.04	3.31	2.90	2.26	2.62	2.14	2.17	1.96
01/26/05	6.33	5.83	4.86	4.01	6.11	5.29	4.82	3.66	3.53	2.60	3.09	2.33	2.17	1.97

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
01/27/05	7.27	6.65	5.79	4.96	6.57	5.88	4.98	4.15	3.84	3.08	3.41	2.76	2.33	2.10
01/28/05	7.27	6.90	5.79	5.26	7.19	6.14	5.60	4.49	4.16	3.50	3.88	3.17	2.49	2.16
01/29/05	7.73	7.00	6.72	5.66	7.65	6.61	5.76	4.86	4.16	3.65	3.73	3.19	2.33	2.10
01/30/05	7.57	6.73	6.10	5.05	7.03	5.94	5.44	4.09	4.32	3.01	3.88	2.67	2.64	2.18
01/31/05	6.64	6.01	5.01	4.41	6.42	5.62	4.67	3.75	3.53	2.69	3.09	2.47	2.17	2.02
02/01/05	6.49	5.57	5.48	4.20	6.57	5.65	5.13	3.87	4.01	2.83	3.73	2.57	2.64	2.15
02/02/05	6.49	5.68	5.32	4.30	6.42	5.51	5.13	3.80	4.01	2.76	3.57	2.51	2.49	2.09
02/03/05	6.64	5.70	5.48	4.32	6.57	5.54	5.13	3.77	4.16	2.74	3.88	2.52	2.49	2.08
02/04/05	5.86	5.44	4.54	4.03	6.11	5.37	4.67	3.59	3.37	2.55	3.09	2.40	2.33	2.03
02/05/05	6.49	5.68	5.17	4.15	6.73	5.48	5.13	3.78	3.84	2.76	3.73	2.54	2.64	2.17
02/06/05	5.71	5.21	4.54	3.90	6.42	5.24	4.67	3.40	3.53	2.39	3.09	2.24	2.33	2.00
02/07/05	7.11	6.01	5.94	4.55	6.73	5.70	5.44	3.98	4.47	2.98	4.19	2.70	2.49	2.08
02/08/05	7.27	6.35	5.94	4.62	6.57	5.60	5.44	3.90	4.32	2.84	3.57	2.53	2.49	2.01
02/09/05	6.49	5.67	5.32	4.14	6.42	5.33	4.98	3.49	4.01	2.47	3.41	2.26	2.33	1.93
02/10/05	6.64	5.49	5.63	4.17	6.26	5.27	5.13	3.57	4.16	2.54	3.88	2.23	2.49	2.01
02/11/05	6.02	5.29	4.70	3.88	6.11	5.23	4.67	3.43	3.53	2.37	3.09	2.18	2.33	1.89
02/12/05	7.88	6.45	6.72	5.07	7.50	6.08	6.07	4.32	4.79	3.29	4.35	2.97	2.64	2.16
02/13/05	7.73	7.28	6.41	5.71	7.34	6.66	5.76	4.80	4.32	3.68	3.57	3.24	2.17	2.07
02/14/05	7.88	7.02	6.72	5.48	7.34	6.20	5.44	4.34	4.32	3.26	4.19	2.82	2.64	2.17
02/15/05	6.80	5.87	5.48	4.12	6.11	4.95	4.82	3.31	3.84	2.32	3.73	2.12	2.49	1.93
02/16/05	6.18	5.04	5.17	3.55	5.96	4.66	4.82	3.06	3.84	2.06	3.57	1.92	2.33	1.83
02/17/05	6.02	4.77	5.17	3.47	5.96	4.63	4.82	3.08	3.84	2.11	3.57	1.96	2.49	1.87
02/18/05	6.18	5.07	5.01	3.73	6.26	5.02	4.67	3.19	3.84	2.29	3.41	2.24	2.33	1.90
02/19/05	6.33	5.93	5.32	4.58	6.73	5.89	4.98	4.07	3.69	3.05	3.09	2.75	2.17	2.01
02/20/05	7.57	6.83	6.10	5.14	7.34	6.20	5.76	4.50	4.63	3.52	4.04	3.06	2.33	2.00
02/21/05	8.34	7.58	6.87	5.95	7.50	6.68	5.44	4.70	4.16	3.67	3.88	3.26	2.81	2.14
02/22/05	9.12	7.64	7.64	6.08	8.72	7.34	7.62	5.80	6.66	4.86	5.91	4.20	2.81	2.22
02/23/05	9.12	7.67	8.42	6.59	8.72	7.22	6.84	5.30	5.88	4.37	4.98	3.78	2.81	2.26
02/24/05	9.27	8.03	8.42	6.67	9.03	7.30	7.00	5.35	6.03	4.45	5.44	3.82	2.96	2.31
02/25/05	9.58	8.20	8.72	6.85	9.49	7.83	7.77	5.77	6.66	4.77	5.91	4.09	2.96	2.36
02/26/05	9.74	8.31	8.88	7.01	9.33	7.62	7.62	5.55	6.66	4.60	5.76	3.97	3.12	2.42
02/27/05	9.74	8.43	9.03	7.09	9.64	7.74	7.77	5.64	6.97	4.75	5.91	4.14	3.12	2.50
02/28/05	9.89	8.90	8.88	7.30	9.03	7.79	7.00	5.67	6.19	4.76	5.29	4.19	2.96	2.50

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
03/01/05	9.43	8.59	9.03	7.48	9.33	7.76	7.46	5.72	6.82	4.74	6.07	4.11	3.28	2.65
03/02/05	9.58	8.79	8.26	7.40	8.57	7.82	7.00	5.88	6.19	4.95	5.44	4.39	3.28	2.64
03/03/05	10.83	9.57	10.43	8.29	10.11	8.47	8.39	6.45	7.44	5.53	6.68	4.78	3.44	2.77
03/04/05	11.60	10.06	10.43	8.52	10.73	8.73	8.86	6.90	8.06	5.97	6.84	5.11	3.59	2.90
03/05/05	11.44	10.04	10.58	8.56	10.88	8.94	9.01	6.90	8.21	5.97	6.99	5.16	3.59	2.97
03/06/05	11.76	10.21	10.89	8.86	10.73	9.04	9.17	7.01	8.21	6.07	6.99	5.28	3.75	3.02
03/07/05	12.07	10.54	11.20	9.22	11.04	9.40	9.48	7.33	8.67	6.39	7.30	5.52	3.91	3.13
03/08/05	12.84	11.14	11.97	9.67	11.50	9.78	10.09	7.74	9.29	6.79	7.92	5.83	4.07	3.27
03/09/05	13.00	11.42	12.28	10.08	11.81	10.12	10.25	7.95	9.45	6.97	7.92	6.02	4.22	3.41
03/10/05	13.77	12.09	12.74	10.66	12.12	10.46	10.72	8.40	9.92	7.42	8.38	6.40	4.22	3.54
03/11/05	13.31	11.85	12.74	10.50	12.12	10.38	10.72	8.45	9.92	7.45	8.38	6.44	4.38	3.65
03/12/05	12.53	11.41	12.12	10.23	12.12	10.30	10.25	8.20	9.61	7.26	8.38	6.39	4.38	3.66
03/13/05	11.14	9.96	10.58	8.92	10.58	9.17	9.48	7.24	8.37	6.25	7.46	5.48	4.38	3.68
03/14/05	11.14	9.52	10.58	8.40	10.58	8.90	9.17	6.77	8.37	5.92	7.46	5.35	4.38	3.69
03/15/05	10.67	9.52	10.12	8.49	10.73	9.23	9.32	7.17	8.52	6.25	7.46	5.60	4.38	3.71
03/16/05	10.05	9.04	8.88	8.21	9.96	8.98	8.08	6.93	7.13	5.88	6.22	5.26	4.07	3.72
03/17/05	11.14	9.22	11.20	8.73	11.19	9.33	9.32	7.38	8.67	6.44	8.22	5.76	4.69	4.00
03/18/05	10.05	9.00	9.34	8.02	9.96	8.75	8.39	6.82	7.74	5.87	6.53	5.27	4.38	3.87
03/19/05	10.21	9.36	9.34	8.51	10.11	9.24	8.08	7.13	7.44	6.14	6.53	5.51	4.38	4.00
03/20/05	11.91	10.35	10.89	9.35	11.04	9.65	9.48	7.87	8.67	7.04	8.07	6.28	4.54	4.21
03/21/05	11.76	10.91	11.51	10.00	11.81	10.37	10.41	8.57	9.76	7.67	8.53	6.88	4.85	4.34
03/22/05	11.29	10.71	11.20	9.89	10.73	10.01	9.17	8.15	8.21	7.21	6.99	6.43	4.69	4.46
03/23/05	11.91	10.82	11.04	9.65	10.58	9.62	8.54	7.55	7.59	6.62	6.84	5.95	4.85	4.51
03/24/05	12.07	10.80	11.36	9.37	10.73	9.39	9.01	7.59	8.21	6.78	7.76	6.14	5.17	4.54
03/25/05	11.14	10.17	10.43	8.72	10.58	8.98	8.86	7.20	8.21	6.39	7.46	5.91	5.01	4.53
03/26/05	10.36	9.19	9.49	8.05	10.58	8.89	9.01	7.13	8.21	6.31	7.61	5.81	5.32	4.67
03/27/05	10.05	9.57	9.64	9.00	10.58	9.76	8.86	7.98	7.74	7.07	6.84	6.54	5.01	4.93
03/28/05	12.22	10.65	10.89	9.72	12.27	10.40	10.25	8.82	9.76	8.05	8.99	7.23	5.63	5.04
03/29/05	11.44	10.50	10.89	9.51	10.88	9.91	9.32	8.32	8.98	7.53	8.22	6.88	5.17	4.85
03/30/05	10.21	9.31	9.96	8.53	10.88	9.27	9.48	7.73	8.83	6.94	8.69	6.55	5.48	5.03
03/31/05	11.76	9.68	11.97	9.12	12.27	9.94	10.72	8.22	10.38	7.28	8.53	6.55	5.95	5.20
04/01/05	10.98	9.95	10.89	9.71	11.34	10.21	10.41	8.75	9.61	7.96	8.84	7.23	5.95	5.41
04/02/05	13.46	10.94	14.13	11.01	13.66	11.25	12.73	9.92	12.40	9.14	11.62	8.34	6.26	5.68

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
04/03/05	13.31	12.34	12.43	11.65	12.42	11.53	11.96	10.17	10.69	9.23	8.99	8.39	6.11	5.66
04/04/05	12.69	11.85	11.97	10.68	11.66	10.60	10.25	9.10	9.45	8.21	8.99	7.43	5.95	5.64
04/05/05	13.16	11.28	12.59	10.09	12.42	10.15	11.18	8.80	11.01	8.05	10.23	7.56	6.26	5.58
04/06/05	14.39	12.34	14.76	11.85	14.43	11.94	13.66	10.77	13.64	10.05	12.39	9.37	7.35	6.25
04/07/05	13.92	12.40	13.52	12.47	13.50	12.58	13.19	11.44	12.24	10.62	10.85	9.67	7.04	6.46
04/08/05	12.53	11.64	13.82	11.97	13.19	11.84	11.80	10.61	11.62	9.90	11.32	9.28	6.88	6.30
04/09/05	12.22	11.43	13.52	11.63	13.19	11.47	11.33	10.12	10.69	9.37	9.77	8.71	6.57	6.09
04/10/05	13.16	11.10	14.13	11.16	13.50	11.02	12.42	9.86	12.24	9.27	11.78	8.83	6.73	6.03
04/11/05	13.62	12.37	14.29	12.01	12.58	11.14	11.64	9.95	10.69	9.27	10.23	8.56	6.57	6.04
04/12/05	14.23	13.21	13.67	12.17	11.81	10.55	11.49	9.52	11.01	8.88	9.92	8.05	6.73	6.33
04/13/05	13.62	11.54	11.51	10.38	10.88	9.39	9.79	8.44	9.29	7.95	8.84	7.37	6.26	5.98
04/14/05	11.91	10.34	12.12	9.60	10.58	8.66	9.63	7.71	9.14	7.22	8.53	6.85	6.57	6.05
04/15/05	13.16	11.33	13.52	10.34	11.50	9.23	10.87	8.30	10.38	7.76	9.31	7.25	6.88	6.28
04/16/05	14.54	12.63	15.07	11.84	12.58	10.16	11.80	9.19	11.31	8.66	10.39	8.02	7.19	6.68
04/17/05	14.39	13.61	13.21	12.07	11.81	10.12	10.41	8.99	9.45	8.41	8.22	7.81	6.73	6.52
04/18/05	13.31	12.08	13.36	10.53	10.27	9.01	9.63	8.13	9.29	7.72	9.15	7.44	6.57	6.26
04/19/05	12.22	11.29	13.06	10.34	10.27	9.08	9.32	8.11	8.83	7.55	8.22	7.03	6.57	6.31
04/20/05	11.91	11.13	10.89	9.70	9.33	8.27	8.24	7.48	7.74	7.06	7.30	6.69	6.57	6.30
04/21/05	12.38	11.24	11.04	9.81	10.11	8.78	9.79	8.12	9.61	7.74	9.15	7.32	6.73	6.39
04/22/05	14.08	12.30	14.92	11.50	12.27	9.81	11.64	9.03	11.16	8.49	10.08	7.89	7.04	6.65
04/23/05	15.49	14.29	13.06	12.29	11.34	10.05	10.25	9.07	9.45	8.48	8.84	7.84	7.04	6.69
04/24/05	14.70	13.09	12.12	11.16	9.96	9.10	8.86	8.24	8.37	7.75	8.07	7.28	6.88	6.57
04/25/05	16.44	13.89	16.02	12.58	12.42	10.29	11.64	9.41	11.01	8.73	10.08	8.03	6.88	6.63
04/26/05	17.72	15.87	17.93	14.62	13.19	10.90	12.57	9.87	11.78	9.07	10.54	8.27	6.88	6.61
04/27/05	17.88	16.70	18.73	15.32	12.89	11.17	12.27	9.98	11.62	9.15	10.39	8.28	7.04	6.70
04/28/05	18.37	16.43	16.97	14.24	11.81	10.38	10.87	9.27	10.54	8.56	9.61	7.83	6.88	6.67
04/29/05	16.76	14.99	14.92	12.74	10.88	9.47	10.41	8.65	10.07	8.13	9.31	7.65	7.04	6.77
04/30/05	17.40	14.88	15.87	12.62	12.27	9.94	11.64	9.06	11.01	8.48	10.08	7.91	7.19	6.84
05/01/05	18.04	15.74	17.13	13.67	12.73	10.40	11.80	9.45	11.31	8.81	10.54	8.19	7.04	6.85
05/02/05	18.53	16.71	16.34	13.95	12.42	10.57	11.64	9.55	11.47	8.89	10.08	8.09	7.19	6.92
05/03/05	19.51	17.48	18.09	14.85	13.04	10.90	12.11	9.83	11.47	9.13	10.39	8.34	7.19	6.92
05/04/05	18.69	17.13	16.34	14.30	11.81	10.23	10.41	9.12	9.92	8.42	8.99	7.80	7.19	7.00
05/05/05	18.21	16.89	16.65	14.04	11.81	10.42	11.18	9.49	10.69	8.91	9.92	8.21	7.19	7.09

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
05/06/05	17.40	16.26	15.55	13.71	11.19	10.15	10.41	9.20	9.76	8.58	9.15	7.97	7.19	7.07
05/07/05	16.61	14.89	14.92	12.84	11.66	10.12	10.72	9.18	10.38	8.62	9.61	8.09	7.19	7.08
05/08/05	16.28	15.49	14.60	12.98	12.27	10.57	11.49	9.58	11.01	8.93	10.39	8.31	7.50	7.21
05/09/05	15.65	14.46	13.36	12.36	11.19	9.88	9.94	9.05	9.61	8.51	8.99	8.00	7.66	7.32
05/10/05	13.46	12.65	12.12	11.05	10.11	9.32	9.48	8.62	9.14	8.15	8.84	7.79	7.35	7.29
05/11/05	13.92	12.67	11.82	10.81	10.42	9.24	9.79	8.60	9.29	8.14	8.84	7.79	7.50	7.29
05/12/05	16.76	14.11	15.87	12.83	12.58	10.54	12.11	9.84	11.62	9.36	10.70	8.79	7.81	7.51
05/13/05	18.21	16.35	17.13	14.40	13.50	11.24	13.04	10.42	12.40	9.79	11.16	9.00	7.81	7.65
05/14/05	19.02	17.28	16.97	14.83	13.50	11.41	12.88	10.57	12.40	9.93	11.32	9.17	7.97	7.75
05/15/05	17.88	16.79	15.07	14.16	12.73	10.90	11.33	9.94	10.23	9.27	9.46	8.64	7.81	7.77
05/16/05	16.13	14.69	13.36	12.24	11.04	10.11	9.94	9.39	9.29	8.83	8.53	8.25	7.97	7.72
05/17/05	14.54	13.12	14.29	12.11	12.58	10.51	11.96	9.90	11.62	9.39	11.01	8.92	8.12	7.91
05/18/05	15.49	14.45	15.87	13.79	12.89	11.32	12.27	10.42	11.62	9.73	10.39	9.05	8.12	8.06
05/19/05	18.21	16.23	17.77	15.34	13.66	12.20	13.04	11.18	12.09	10.39	11.01	9.52	8.43	8.13
05/20/05	17.24	16.29	15.71	14.51	12.58	11.58	11.49	10.46	10.85	9.77	10.23	9.16	8.43	8.18
05/21/05	17.40	15.34	16.65	14.04	14.12	11.89	13.19	10.85	12.71	10.20	11.62	9.54	8.58	8.31
05/22/05	18.86	16.76	18.25	15.62	15.22	12.85	14.59	11.74	13.95	11.00	12.71	10.14	8.58	8.42
05/23/05	18.37	16.46	17.61	15.39	14.58	12.73	13.81	11.55	13.33	10.81	12.24	9.94	8.74	8.54
05/24/05	18.69	16.69	17.29	15.23	14.58	12.51	13.81	11.36	13.49	10.66	12.24	9.91	8.89	8.59
05/25/05	19.51	17.08	18.09	15.37	15.06	12.73	14.28	11.56	13.79	10.88	12.55	10.11	9.05	8.73
05/26/05	20.97	18.12	19.38	16.30	15.84	13.39	14.91	12.17	14.42	11.37	13.02	10.46	9.05	8.82
05/27/05	22.13	19.37	20.68	17.59	16.16	13.87	15.07	12.47	14.26	11.57	12.86	10.57	9.05	8.86
05/28/05	23.13	20.59	21.67	18.49	16.01	13.85	15.22	12.55	14.42	11.63	13.17	10.60	9.21	8.93
05/29/05	22.13	19.93	19.87	17.65	14.90	13.33	14.12	12.14	13.64	11.28	12.71	10.32	9.21	9.02
05/30/05	21.97	19.23	20.84	17.49	16.01	13.55	15.22	12.40	14.57	11.61	13.17	10.75	9.36	9.08
05/31/05	20.97	19.39	18.25	16.80	14.90	13.01	13.19	11.79	12.71	11.07	11.78	10.27	9.36	9.12
06/01/05	19.18	17.71	18.09	15.72	14.27	12.77	13.19	11.69	12.56	11.00	11.93	10.27	9.36	9.18
06/02/05	19.34	17.20	17.77	15.43	14.58	12.54	13.81	11.52	13.49	10.97	12.55	10.37	9.52	9.26
06/03/05	20.31	17.73	18.89	16.20	15.22	13.07	14.43	12.01	13.95	11.41	13.02	10.71	9.67	9.35
06/04/05	21.63	19.04	20.19	17.24	16.01	13.68	15.22	12.54	14.73	11.83	13.48	10.98	9.67	9.38
06/05/05	20.64	18.56	18.25	16.73	14.90	13.07	13.35	11.88	12.56	11.17	12.08	10.47	9.67	9.45
06/06/05	18.37	16.90	17.45	15.39	14.43	12.66	13.66	11.73	13.33	11.16	12.71	10.56	9.67	9.44
06/07/05	17.40	15.81	15.87	14.21	13.50	11.95	12.73	11.08	12.40	10.57	11.78	10.16	9.67	9.52

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
06/08/05	18.21	15.93	16.65	14.39	14.43	12.41	13.66	11.54	13.18	11.05	12.55	10.51	9.83	9.61
06/09/05	19.67	17.15	18.09	15.38	15.37	12.94	14.91	12.06	14.26	11.50	13.32	10.87	9.83	9.63
06/10/05	19.51	17.98	18.73	16.44	15.53	13.44	14.75	12.41	14.26	11.74	13.17	10.98	9.98	9.67
06/11/05	20.47	18.43	19.71	16.93	15.22	13.44	14.43	12.40	13.79	11.72	12.71	10.97	9.98	9.83
06/12/05	19.99	18.09	18.09	16.18	14.90	13.02	14.28	12.11	13.79	11.53	12.86	10.93	10.14	9.90
06/13/05	20.64	17.88	19.06	16.06	15.69	13.12	15.07	12.29	14.57	11.73	13.48	11.12	10.14	9.99
06/14/05	20.97	18.98	18.09	16.59	15.22	13.56	14.59	12.62	14.26	12.00	13.17	11.31	10.29	10.08
06/15/05	22.13	19.24	20.03	17.08	16.16	13.82	15.54	12.92	14.89	12.27	13.63	11.50	10.29	10.13
06/16/05	21.47	19.93	19.54	17.63	15.22	13.58	14.28	12.59	13.79	11.95	13.02	11.29	10.45	10.27
06/17/05	19.99	18.83	17.93	16.56	15.06	13.64	14.28	12.76	13.95	12.18	13.17	11.48	10.61	10.39
06/18/05	19.51	18.11	17.13	15.81	15.53	13.55	14.75	12.68	14.26	12.10	13.02	11.43	10.61	10.45
06/19/05	20.97	18.29	19.54	16.57	16.63	13.88	16.02	13.07	15.37	12.52	14.25	11.85	10.92	10.62
06/20/05	23.13	20.10	20.84	18.20	17.11	14.62	16.33	13.62	15.68	12.92	14.41	12.07	10.92	10.73
06/21/05	23.64	21.52	20.51	18.92	16.32	14.55	15.54	13.55	15.21	12.88	14.25	12.10	11.07	10.85
06/22/05	24.34	21.94	20.68	18.66	17.11	14.60	16.33	13.69	15.68	13.03	14.56	12.28	11.22	10.98
06/23/05	23.31	21.13	20.19	18.15	16.79	14.50	16.02	13.60	15.53	12.99	14.41	12.26	11.22	11.04
06/24/05	24.17	21.57	20.35	18.14	16.94	14.54	16.33	13.66	15.68	13.08	14.56	12.39	11.38	11.21
06/25/05	23.99	22.10	20.03	18.30	17.11	14.86	16.49	13.94	15.84	13.30	14.72	12.53	11.53	11.29
06/26/05	22.63	20.89	19.54	17.72	16.32	14.43	15.86	13.56	15.53	13.00	14.41	12.38	11.53	11.39
06/27/05	21.13	19.23	17.29	16.43	15.06	13.49	13.66	12.72	13.33	12.33	12.39	11.90	11.53	11.49
06/28/05	20.15	18.37	18.09	16.41	15.69	14.11	15.07	13.37	14.42	12.91	13.94	12.41	11.69	11.53
06/29/05	21.80	19.48	19.38	17.32	16.94	14.68	16.33	13.83	15.84	13.32	14.87	12.74	11.84	11.67
06/30/05	22.80	20.62	19.87	18.09	17.58	15.08	16.81	14.26	16.32	13.69	15.19	13.02	12.00	11.79
07/01/05	23.82	21.46	20.35	18.68	17.74	15.49	16.97	14.55	16.48	13.94	15.19	13.18	12.00	11.82
07/02/05	22.63	21.16	20.03	18.50	17.11	15.17	16.49	14.27	16.00	13.70	15.03	13.00	12.16	11.85
07/03/05	22.30	20.52	19.71	17.98	17.11	14.91	16.65	14.12	16.16	13.60	15.19	12.99	12.16	11.99
07/04/05	22.97	20.73	19.87	18.06	17.58	15.18	16.97	14.38	16.48	13.85	15.35	13.20	12.31	12.04
07/05/05	23.82	21.41	20.35	18.60	17.74	15.47	17.13	14.61	16.63	14.01	15.51	13.32	12.31	12.13
07/06/05	24.68	22.32	21.17	19.24	17.91	15.73	17.13	14.82	16.63	14.19	15.51	13.44	12.31	12.19
07/07/05	25.21	22.94	22.00	19.58	18.07	15.92	17.44	15.00	16.95	14.37	15.67	13.61	12.47	12.29
07/08/05	25.91	23.59	22.16	19.81	18.23	16.06	17.44	15.12	16.95	14.48	15.67	13.72	12.62	12.40
07/09/05	24.34	20.60	20.03	17.52	16.94	14.63	15.38	13.80	14.42	13.36	13.63	12.93	12.47	12.37
07/10/05	21.30	18.89	18.89	16.85	16.94	14.92	16.18	14.27	16.00	13.87	15.03	13.39	12.62	12.52

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
07/11/05	23.48	20.74	21.67	18.67	18.23	15.72	17.44	14.94	16.95	14.44	15.82	13.79	12.78	12.63
07/12/05	25.03	22.57	22.00	19.49	18.71	16.22	17.92	15.33	17.27	14.75	16.14	14.03	12.93	12.71
07/13/05	24.86	23.16	22.00	19.92	18.39	16.35	17.76	15.44	17.27	14.82	16.14	14.10	12.93	12.81
07/14/05	23.64	21.74	20.51	18.87	18.23	15.92	17.61	15.09	17.11	14.57	15.98	13.95	13.09	12.93
07/15/05	24.34	22.03	21.67	19.15	18.71	16.22	17.92	15.38	17.43	14.84	16.36	14.19	13.24	13.01
07/16/05	24.68	22.71	22.49	20.06	18.71	16.53	17.92	15.61	17.43	15.02	16.46	14.35	13.24	13.06
07/17/05	23.82	21.62	21.50	19.02	18.23	16.08	17.76	15.29	17.27	14.79	16.29	14.21	13.40	13.18
07/18/05	23.99	21.77	21.67	19.05	18.71	16.28	18.08	15.47	17.59	14.98	16.61	14.38	13.40	13.30
07/19/05	25.03	22.71	22.33	19.78	19.03	16.62	18.24	15.76	17.75	15.22	16.77	14.56	13.56	13.35
07/20/05	25.38	23.27	22.33	19.95	19.03	16.77	18.24	15.88	17.91	15.32	16.93	14.67	13.56	13.45
07/21/05	25.21	23.47	22.33	20.04	19.03	16.88	18.24	15.96	17.59	15.36	16.83	14.73	13.71	13.55
07/22/05	25.73	24.16	23.33	20.71	19.68	17.44	18.57	16.46	18.07	15.79	16.93	15.06	13.71	13.62
07/23/05	25.03	22.98	22.16	19.99	19.03	17.03	18.41	16.09	17.91	15.52	17.08	14.91	13.86	13.74
07/24/05	24.51	22.67	22.00	19.56	19.19	16.92	18.57	16.05	18.07	15.53	17.24	14.93	14.02	13.80
07/25/05	23.13	21.57	21.50	19.31	18.55	16.69	17.92	15.83	17.59	15.31	16.77	14.76	14.02	13.83
07/26/05	23.31	21.01	21.67	18.96	19.03	16.65	18.41	15.89	18.07	15.47	17.24	14.98	14.17	14.03
07/27/05	23.99	21.59	22.33	19.33	19.19	16.97	18.57	16.18	18.23	15.70	17.24	15.12	14.17	14.07
07/28/05	23.82	22.00	23.16	19.68	18.87	16.85	18.24	16.06	17.91	15.59	17.08	15.05	14.33	14.16
07/29/05	24.51	22.62	22.66	19.98	19.19	17.46	18.57	16.61	18.23	16.10	17.63	15.50	14.48	14.26
07/30/05	25.21	23.03	23.33	20.56	19.68	17.61	19.06	16.76	18.72	16.22	17.63	15.62	14.64	14.38
07/31/05	25.21	23.26	23.67	20.87	19.68	17.70	19.22	16.88	18.72	16.35	17.79	15.73	14.64	14.45
08/01/05	25.38	23.58	22.66	20.80	18.87	17.51	18.08	16.61	17.27	16.05	16.83	15.52	14.64	14.56
08/02/05	23.99	22.58	21.50	20.04	18.71	17.22	18.24	16.50	17.91	16.11	17.47	15.62	14.80	14.70
08/03/05	23.31	21.68	21.33	19.34	19.36	17.17	18.73	16.50	18.56	16.17	17.79	15.71	14.96	14.75
08/04/05	23.82	21.83	21.67	19.47	19.52	17.34	19.06	16.63	18.72	16.29	17.88	15.79	14.96	14.87
08/05/05	24.34	22.32	22.00	19.85	19.68	17.53	19.22	16.85	18.88	16.47	18.04	15.93	15.12	15.02
08/06/05	24.34	22.70	21.67	19.87	19.52	17.56	18.73	16.86	18.23	16.49	17.56	15.97	15.28	15.12
08/07/05	23.64	22.67	20.51	19.61	18.71	17.43	18.24	16.75	17.91	16.39	17.08	15.92	15.44	15.24
08/08/05	23.48	22.21	21.50	19.77	19.68	17.80	19.06	17.16	18.72	16.83	18.04	16.34	15.44	15.36
08/09/05	24.34	22.40	22.16	20.36	20.00	18.05	19.38	17.32	19.04	16.92	18.20	16.38	15.59	15.43
08/10/05	24.17	22.60	21.83	20.20	19.84	17.97	19.22	17.25	18.88	16.91	18.20	16.41	15.59	15.53
08/11/05	23.13	21.60	20.68	19.29	19.52	17.61	19.06	16.96	18.72	16.69	18.04	16.29	15.76	15.65
08/12/05	22.47	21.15	19.87	18.75	19.19	17.47	18.89	16.87	18.56	16.65	18.04	16.28	15.91	15.70

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
08/13/05	21.47	20.17	19.87	18.60	19.36	17.42	18.89	16.86	18.72	16.67	18.20	16.37	15.91	15.87
08/14/05	21.30	19.93	20.03	18.60	19.52	17.53	19.22	17.00	19.04	16.84	18.36	16.51	16.07	15.96
08/15/05	21.47	20.04	20.19	18.71	19.84	17.72	19.38	17.18	19.21	17.00	18.52	16.63	16.23	16.03
08/16/05	22.13	20.63	20.35	19.14	19.36	17.80	18.89	17.21	18.72	16.98	18.36	16.66	16.39	16.11
08/17/05	21.80	20.56	20.35	19.08	19.68	18.07	19.38	17.51	19.21	17.25	18.52	16.87	16.39	16.24
08/18/05	22.13	20.57	20.68	19.32	19.84	18.23	19.55	17.68	19.37	17.45	18.68	17.05	16.39	16.29
08/19/05	21.97	20.57	20.68	19.08	20.00	18.07	19.71	17.55	19.54	17.37	18.84	17.01	16.54	16.41
08/20/05	22.80	20.88	21.33	19.51	20.32	18.42	20.03	17.87	19.86	17.63	19.17	17.21	16.71	16.50
08/21/05	22.80	21.30	21.33	19.73	20.48	18.55	20.03	17.99	19.86	17.75	19.24	17.30	16.86	16.58
08/22/05	23.64	22.04	22.00	20.57	20.64	19.03	20.19	18.40	20.03	18.08	19.24	17.61	16.86	16.70
08/23/05	22.80	21.52	21.17	19.81	20.16	18.58	19.87	18.00	19.54	17.78	19.08	17.44	17.02	16.80
08/24/05	21.13	19.67	19.87	18.42	19.36	17.81	19.22	17.38	19.21	17.30	18.92	17.14	17.02	16.86
08/25/05	20.47	18.98	19.71	17.99	19.84	17.87	19.55	17.50	19.54	17.44	19.24	17.31	17.18	16.96
08/26/05	20.97	19.29	20.35	18.52	20.32	18.34	19.87	17.89	19.86	17.78	19.40	17.56	17.34	17.06
08/27/05	21.63	19.97	20.68	19.09	20.32	18.62	20.03	18.11	19.86	17.95	19.40	17.67	17.34	17.12
08/28/05	21.80	20.24	20.68	19.26	20.64	18.67	20.36	18.20	20.19	18.05	19.56	17.75	17.50	17.22
08/29/05	21.30	20.12	20.51	19.29	20.16	18.72	20.03	18.21	19.86	18.03	19.40	17.74	17.50	17.26
08/30/05	19.83	18.44	19.38	17.78	19.36	17.84	19.22	17.44	19.37	17.42	19.08	17.38	17.50	17.31
08/31/05	19.99	18.20	19.71	17.66	20.00	18.10	19.87	17.74	19.86	17.73	19.56	17.68	17.66	17.42
09/01/05	20.47	18.68	20.68	18.33	20.32	18.59	20.19	18.19	20.35	18.11	19.89	17.92	17.66	17.47
09/02/05	20.64	19.10	21.01	18.73	20.32	18.75	20.19	18.30	20.35	18.20	19.82	17.94	17.82	17.53
09/03/05	21.13	19.55	20.92	18.63	20.64	18.92	20.36	18.45	20.35	18.32	19.98	18.05	17.66	17.56
09/04/05	20.47	19.44	22.08	16.91	19.68	18.50	19.38	18.06	19.37	17.93	19.17	17.77	17.66	17.59
09/05/05	19.99	18.68	22.58	17.17	19.84	18.34	19.87	18.02	19.86	18.01	19.66	17.93	17.82	17.68
09/06/05	20.15	18.67	22.75	16.82	20.32	18.58	20.19	18.23	20.35	18.20	19.98	18.08	17.98	17.77
09/07/05	20.64	18.96	23.59	17.42	20.48	18.86	20.36	18.43	20.51	18.37	19.98	18.16	17.98	17.80
09/08/05	20.64	19.17	25.67	18.38	20.64	19.04	20.52	18.61	20.67	18.52	20.14	18.28	18.14	17.85
09/09/05	19.99	18.63	23.77	17.09	20.16	18.82	19.71	18.33	19.86	18.20	19.49	17.96	17.98	17.79
09/10/05	18.04	16.92	16.88	13.04	19.03	17.69	19.06	17.48	19.37	17.59	19.33	17.70	17.98	17.84
09/11/05	17.56	16.23	17.04	12.17	18.87	17.44	19.06	17.28	19.37	17.43	19.33	17.58	17.98	17.84
09/12/05	17.24	15.98	19.29	13.35	18.87	17.48	18.89	17.30	19.21	17.46	19.17	17.58	17.82	17.73
09/13/05	18.37	16.87	20.92	15.97	19.36	18.07	19.38	17.83	19.54	17.88	19.49	17.85	17.82	17.71
09/14/05	18.37	16.89	20.92	14.78	19.36	17.82	19.38	17.56	19.54	17.61	19.33	17.62	17.82	17.57

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
09/15/05	18.53	16.99	22.08	15.62	19.36	17.97	19.38	17.70	19.54	17.71	19.33	17.65	17.66	17.56
09/16/05	17.88	17.03	21.42	15.25	18.87	17.83	19.06	17.55	19.21	17.55	19.01	17.48	17.66	17.49
09/17/05	17.56	16.67	14.98	13.36	18.23	17.43	17.92	17.12	18.23	17.17	18.20	17.24	17.50	17.35
09/18/05	17.56	16.27	17.52	13.01	18.71	17.30	18.73	17.09	19.04	17.18	18.84	17.22	17.34	17.23
09/19/05	17.56	16.22	20.42	13.88	19.03	17.46	19.06	17.19	19.21	17.21	19.01	17.21	17.34	17.16
09/20/05	17.72	16.51	22.58	15.77	19.19	17.81	19.22	17.49	19.37	17.45	19.17	17.33	17.34	17.15
09/21/05	18.37	17.08	22.92	16.97	19.19	18.18	18.89	17.73	19.04	17.60	18.84	17.38	17.18	17.00
09/22/05	17.40	16.38	21.25	15.13	18.39	17.39	18.41	17.02	18.39	16.96	18.36	16.89	17.02	16.89
09/23/05	16.61	15.89	19.62	14.17	18.23	17.26	17.92	16.92	18.07	16.85	18.04	16.80	16.86	16.69
09/24/05	15.65	14.61	12.03	10.50	16.94	15.65	16.49	15.34	16.16	15.42	15.98	15.69	16.54	16.54
09/25/05	15.02	13.80	17.36	10.76	17.42	15.57	17.44	15.53	17.75	15.76	17.88	16.10	16.54	16.44
09/26/05	14.54	13.74	18.32	12.39	17.58	16.27	17.61	16.02	17.59	16.05	17.72	16.14	16.54	16.34
09/27/05	16.61	14.85	22.25	14.73	18.07	17.01	17.92	16.67	17.91	16.59	17.88	16.50	16.39	16.27
09/28/05	16.61	15.40	21.42	14.06	17.58	16.47	17.76	16.16	17.91	16.14	17.88	16.16	16.23	16.12
09/29/05	16.13	14.96	22.42	13.28	17.58	16.30	17.61	15.95	17.75	15.92	17.72	15.95	16.23	15.97
09/30/05	17.08	15.59	24.63	16.23	18.23	16.93	17.92	16.46	17.91	16.31	17.72	16.15	16.07	15.92
10/01/05	16.61	15.34	16.72	12.87	17.74	16.28	17.13	15.67	16.95	15.53	16.46	15.44	15.91	15.79
10/02/05	14.86	13.99	13.11	9.92	16.32	15.28	16.02	14.89	16.32	14.96	16.61	15.19	15.76	15.58
10/03/05	14.54	13.88	13.73	9.97	15.84	15.23	15.54	14.81	15.68	14.83	16.14	14.98	15.59	15.42
10/04/05	14.08	13.28	12.81	8.74	15.37	14.65	15.38	14.30	15.53	14.33	15.67	14.58	15.28	15.18
10/05/05	13.62	12.52	14.19	8.58	15.22	14.18	15.07	13.87	15.37	13.93	15.51	14.22	15.12	14.96
10/06/05	13.62	12.45	18.16	10.34	15.53	14.31	15.38	14.07	15.68	14.12	15.67	14.31	14.96	14.77
10/07/05	14.08	12.93	18.97	12.05	15.53	14.62	15.54	14.28	15.53	14.19	15.67	14.24	14.96	14.59
10/08/05	15.33	14.13	19.13	13.49	16.63	15.48	16.02	15.00	15.68	14.64	16.14	14.52	14.48	14.01
10/09/05	15.33	14.20	18.81	12.37	16.16	15.00	15.70	14.45	15.53	14.12	15.82	14.13	14.33	13.64
10/10/05	14.54	13.46	18.16	10.70	15.37	14.36	14.75	13.70	14.89	13.35	15.03	13.31	13.71	13.20
10/11/05	13.77	12.89	13.58	9.73	14.74	13.87	14.28	13.02	13.49	12.50	13.17	12.48	13.71	13.43
10/12/05	13.77	12.75	16.41	10.79	14.90	13.62	14.12	12.91	14.26	12.59	14.25	12.62	14.02	13.56
10/13/05	14.54	13.20	21.08	12.64	15.53	14.27	14.91	13.62	15.05	13.30	15.03	13.30	13.71	13.18
10/14/05	14.86	13.70	25.33	15.36	16.01	14.77	15.22	14.09	15.21	13.73	15.35	13.58	13.71	13.27
10/15/05	15.02	14.21	22.58	15.91	16.01	15.20	15.22	14.42	14.42	13.93	14.41	13.60	13.71	13.44
10/16/05	14.70	13.67	21.25	12.60	15.06	13.90	14.12	13.17	14.11	12.83	14.41	12.86	13.40	12.95
10/17/05	14.70	13.65	21.58	12.99	15.53	14.25	14.75	13.57	14.73	13.23	14.56	13.13	13.09	12.68

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
10/18/05	14.23	13.41	22.92	13.08	15.22	14.30	14.59	13.59	14.57	13.22	14.56	13.07	13.56	12.98
10/19/05	14.39	13.55	23.94	13.54	15.22	14.40	14.28	13.57	13.95	13.10	13.79	12.93	13.40	12.99
10/20/05	14.54	13.54	25.50	13.56	15.06	14.05	14.28	13.29	14.11	12.88	14.09	12.76	13.40	12.96
10/21/05	13.92	13.08	22.42	11.52	14.43	13.61	13.81	12.87	13.79	12.50	13.94	12.47	13.24	12.74
10/22/05	13.31	12.50	22.92	11.36	14.58	13.47	13.66	12.71	13.64	12.37	13.79	12.35	13.09	12.59
10/23/05	13.00	12.18	26.37	11.74	14.43	13.32	13.66	12.56	13.64	12.19	13.63	12.16	13.32	12.60
10/24/05	13.00	12.15	25.84	12.44	14.58	13.49	13.66	12.64	13.49	12.23	13.63	12.20	13.16	12.45
10/25/05	13.46	12.53	27.08	12.93	14.90	13.92	14.12	13.04	13.79	12.53	13.79	12.37	13.16	12.46
10/26/05	13.46	12.95	20.75	12.36	14.74	14.18	13.81	13.20	13.18	12.62	13.48	12.45	12.70	12.28
10/27/05	13.00	12.60	12.65	9.43	14.12	13.27	13.19	12.31	12.56	11.79	12.24	11.84	12.23	12.10
10/28/05	13.31	12.45	16.41	10.51	14.27	13.17	13.19	12.22	12.71	11.71	13.02	11.72	12.54	11.96
10/29/05	12.69	12.08	17.04	9.96	13.96	13.01	12.73	12.06	12.40	11.58	12.86	11.64	12.39	11.90
10/30/05	11.76	11.05	20.26	8.62	13.04	12.04	11.96	11.03	11.47	10.55	12.08	10.68	12.23	11.69
10/31/05	11.29	10.70	15.77	9.59	12.89	11.97	11.64	10.87	11.16	10.32	11.01	10.40		
11/01/05	11.60	10.89	16.09	11.55	12.12	11.45	11.49	10.91	11.31	10.75	11.32	10.73		
11/02/05	11.29	11.22	10.94	8.99	12.89	11.82	11.33	11.04	11.30	10.86	11.16	10.64	11.46	11.38
11/03/05	10.83	10.42	11.10	6.78	12.12	11.52	11.03	10.48	10.99	10.40	10.85	10.14	11.62	11.36
11/04/05	10.67	10.23	9.39	6.87	12.58	11.77	11.03	10.41	10.84	10.36	10.85	10.26	11.31	11.05
11/05/05	10.21	9.73	7.39	5.28	12.27	11.31	10.56	9.97	10.37	9.91	10.39	9.71	11.16	10.87
11/06/05	10.36	9.83	9.55	7.85	12.27	11.55	10.56	10.08	10.37	9.97	9.92	9.71	11.00	10.91
11/07/05	10.83	10.52	10.33	7.89	12.89	11.90	11.03	10.43	10.84	10.34	10.54	10.01	10.84	10.81
11/08/05	10.52	9.83	15.14	6.60	11.96	10.93	10.41	9.44	10.06	9.29	9.77	9.03	10.69	10.49
11/09/05	9.27	8.65	12.65	4.65	11.04	10.21	9.94	8.75	9.90	8.71	9.92	8.62	10.69	10.34
11/10/05	9.27	8.48	10.94	4.18	11.19	10.38	10.09	9.00	10.22	8.99	10.08	8.96	10.53	10.23
11/11/05	9.43	8.75	9.39	4.96	11.81	10.75	10.25	9.30	10.22	9.21	9.92	9.12	10.38	10.01
11/12/05	9.74	9.02	18.48	6.94	11.81	10.83	10.09	9.35	10.06	9.23	9.92	8.95	9.59	9.37
11/13/05	8.96	8.56	5.68	4.52	10.88	10.24	9.01	8.44	8.51	8.21	8.22	7.88	9.59	9.50
11/14/05	8.96	8.35	13.73	5.50	10.73	10.04	9.01	8.34	8.97	8.19	8.69	7.96	9.75	9.45
11/15/05	7.73	7.16	13.73	3.23	9.49	8.58	7.77	6.87	7.58	6.75	7.92	6.78	9.59	9.16
11/16/05	7.27	6.55	13.58	3.26	9.33	8.49	8.08	6.94	8.04	6.92	8.38	7.12	9.44	9.10
11/17/05	7.42	6.60	19.94	4.98	9.80	8.78	8.24	7.21	8.20	7.17	8.38	7.24	9.29	8.89
11/18/05	7.27	6.65	11.10	3.64	9.80	8.79	8.24	7.24	8.20	7.15	8.07	7.14	8.98	8.72
11/19/05	7.73	6.92	14.35	4.49	10.42	9.01	8.54	7.39	8.35	7.31	8.38	7.23	8.83	8.35

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
11/20/05	7.42	6.85	16.57	4.47	10.11	8.87	8.24	7.25	8.04	7.12	8.07	6.98	8.83	8.33
11/21/05	6.80	6.33	16.24	2.69	9.80	8.79	8.08	7.06	8.04	6.96	8.07	6.91	8.52	8.23
11/22/05	6.49	6.28	2.24	0.32	9.18	8.50	7.77	6.85	7.58	6.78	7.76	6.76	8.37	8.09
11/23/05	6.18	6.09	1.61	0.47	9.18	8.53	7.46	6.94	7.11	6.80	6.99	6.71	8.06	7.88
11/24/05	5.86	5.78	0.65	-0.44	8.72	7.83	6.84	6.24	6.49	6.13	6.37	6.14	7.75	7.50
11/25/05	5.86	5.67	2.24	0.58	8.42	7.55	6.22	5.86	6.02	5.73	5.76	5.64	7.75	7.46
11/26/05	6.49	6.00	12.03	3.56	8.88	7.50	7.00	5.90	6.64	5.79	6.53	5.68	7.59	7.37
11/27/05	5.71	5.18	15.14	2.31	7.65	6.71	5.76	4.97	5.39	4.82	5.60	4.80	7.44	7.15
11/28/05	5.08	4.64	3.66	-0.20	7.34	6.39	5.29	4.44	5.08	4.29	5.29	4.40	7.13	6.90
11/29/05	4.93	4.70	3.18	1.56	7.65	7.01	5.76	5.13	5.39	4.84	5.29	4.69	6.98	6.81
11/30/05	5.55	4.88	8.47	1.77	7.81	6.92	6.07	5.28	5.86	5.12	6.07	5.09	6.98	6.71
12/01/05	5.24	4.77	3.66	1.85	8.57	7.42	7.00	5.87	6.03	5.44	5.91	5.39	6.67	6.51
12/02/05	6.02	5.43	11.26	3.07	8.72	7.93	6.84	6.33	6.03	5.63	6.68	5.76	6.67	6.49
12/03/05	6.02	5.70	14.66	2.74	8.42	7.49	6.38	5.83	5.41	5.10	5.60	5.28	6.51	6.35
12/04/05	5.55	5.05	16.57	2.37	7.65	6.48	5.44	4.68	4.63	3.98	5.13	4.33	6.36	6.08
12/05/05	4.62	4.13	10.64	-0.54	7.19	6.07	4.82	4.09	4.16	3.36	4.51	3.82	6.04	5.84
12/06/05	4.46	3.91	2.08	-1.11	6.88	6.01	4.98	4.16	4.16	3.43	4.51	3.94	5.89	5.76
12/07/05	4.46	3.58	1.13	-3.28	6.42	5.21	4.35	3.39	3.37	2.60	3.57	2.96	5.58	5.26
12/08/05	2.26	1.70	8.93	-2.39	4.87	3.88	2.77	1.89	1.79	1.12	2.78	1.87	5.27	5.06
12/09/05	1.94	1.43	2.87	-3.57	5.02	4.00	3.09	2.18	2.27	1.50	3.09	2.23	5.11	4.79
12/10/05	2.89	2.39	2.56	-2.82	5.96	4.76	3.72	2.89	2.90	2.15	3.26	2.62	4.80	4.62
12/11/05	2.42	2.17	4.59	-2.70	5.80	4.48	3.09	2.39	2.42	1.66	3.09	2.20	4.64	4.35
12/12/05	2.42	2.00	0.81	-4.03	5.18	4.25	2.77	2.09	2.11	1.34	2.94	1.94	4.33	4.16
12/13/05	3.05	2.46	12.34	-0.41	5.49	4.52	3.41	2.49	2.58	1.70	2.94	2.18	4.17	4.05
12/14/05	2.57	2.00	5.22	-3.16	5.18	4.24	2.77	2.05	1.94	1.27	2.62	1.76	4.02	3.79
12/15/05	2.26	1.72	7.23	-2.89	4.40	3.60	2.29	1.72	1.47	0.93	2.31	1.48	3.71	3.52
12/16/05	1.78	1.58	-3.77	-4.45	4.56	3.76	1.98	1.59	1.31	0.84	1.83	1.43	3.55	3.37
12/17/05	2.57	2.06	1.13	-3.70	5.49	4.10	2.77	2.02	2.11	1.30	2.62	1.75	3.55	3.20
12/18/05	1.78	1.16	-2.59	-4.37	4.71	3.39	1.98	1.21	0.83	0.38	1.04	0.79	2.76	2.14
12/19/05	2.73	1.58	0.01	-1.17	5.33	4.35	2.93	1.90	1.94	0.99	1.83	1.17	2.44	2.28
12/20/05	4.77	3.83	0.81	-0.01	6.42	5.51	4.04	3.38	3.22	2.52	3.09	2.46	2.44	2.36
12/21/05	5.71	5.22	2.87	1.25	7.03	6.36	4.35	3.99	3.53	3.09	3.26	2.89	2.60	2.51
12/22/05	5.71	5.47	4.12	2.29	7.50	6.63	5.44	4.63	4.63	3.92	4.19	3.77	2.76	2.63

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
12/23/05	5.39	4.83	11.41	2.54	8.42	7.06	5.76	4.90	4.63	3.94	4.51	3.48	2.92	2.64
12/24/05	5.71	5.39	6.15	0.68	7.81	6.57	4.98	4.22	3.84	3.20	3.57	2.98	2.92	2.65
12/25/05	5.55	5.26	2.08	0.65	6.57	5.79	4.19	3.66	3.22	2.74	2.94	2.66	2.76	2.68
12/26/05	6.33	5.78	3.81	1.93	7.50	6.40	4.98	4.45	4.16	3.65	3.73	3.39	2.76	2.76
12/27/05	5.71	5.25	4.75	2.54	7.65	6.67	4.82	4.42	3.84	3.54	3.41	3.18	2.76	2.69
12/28/05	5.55	4.78	8.63	5.89	8.42	7.59	6.22	5.34	5.26	4.61	4.66	4.02	2.92	2.79
12/29/05	6.02	5.38	8.47	3.30	8.11	7.16	5.76	5.08	4.79	4.14	4.19	3.62	2.92	2.79
12/30/05	6.02	5.50	6.15	3.72	7.34	6.55	4.98	4.46	4.16	3.63	3.57	3.22	2.76	2.75
12/31/05	6.80	5.64	8.32	6.63	8.11	7.25	6.07	5.46	5.26	4.64	4.51	4.05	2.92	2.85
01/01/06	6.80	6.59	6.10	5.81	7.81	7.13	5.91	5.34	4.94	4.46	4.35	3.90	3.08	2.85
01/02/06	7.11	6.75	6.25	5.84	7.96	7.13	5.44	5.14	4.47	4.22	4.04	3.69	2.92	2.85
01/03/06	7.11	6.84	6.10	5.74	7.65	7.01	5.44	5.02	4.47	4.05	4.19	3.59	3.08	2.88
01/04/06	7.57	7.08	6.41	5.75	7.81	7.08	5.60	4.96	4.63	3.99	4.35	3.53	3.08	2.82
01/05/06	6.80	6.53	5.63	5.15	7.34	6.56	5.13	4.44	4.16	3.46	3.73	3.04	2.92	2.76
01/06/06	6.33	6.05	5.01	4.70	7.03	6.16	4.67	3.94	3.37	2.94	3.09	2.67	2.76	2.67
01/07/06	6.64	6.15	5.17	4.68	7.50	6.29	4.82	4.06	3.84	3.15	3.41	2.82	2.76	2.67
01/08/06	6.96	6.36	5.63	4.95	7.50	6.42	5.13	4.30	4.16	3.42	4.19	3.10	2.76	2.63
01/09/06	6.18	5.71	4.86	4.25	7.03	6.04	4.51	3.71	3.37	2.74	3.09	2.39	2.76	2.42
01/10/06	6.18	5.67	5.32	4.89	7.19	6.59	4.98	4.36	4.01	3.36	3.26	2.97	2.60	2.53
01/11/06	7.57	6.93	6.72	5.97	8.11	7.27	5.91	5.30	4.94	4.38	4.51	3.84	2.76	2.61
01/12/06	6.96	6.55	5.79	5.26	7.34	6.59	5.13	4.49	4.16	3.54	3.88	3.08	2.60	2.48
01/13/06	6.64	6.33	5.63	5.32	7.65	7.03	5.76	4.99	4.79	4.03	4.04	3.57	2.76	2.53
01/14/06	6.49	6.28	5.94	5.49	7.96	7.23	5.60	5.23	4.63	4.31	4.19	3.90	2.76	2.61
01/15/06	6.49	6.06	5.63	5.05	7.50	6.50	5.44	4.46	4.32	3.51	3.73	3.00	2.76	2.54
01/16/06	5.39	5.02	4.07	3.74	6.57	5.49	3.72	3.07	2.74	2.05	2.62	1.82	2.44	2.30
01/17/06	5.86	5.54	4.54	4.18	6.57	5.95	4.35	3.71	3.37	2.78	2.46	2.28	2.28	2.22
01/18/06	6.49	6.09	5.63	4.96	7.34	6.53	5.29	4.49	4.32	3.54	3.88	2.97	2.44	2.32
01/19/06	6.64	6.20	5.48	4.91	7.34	6.49	4.98	4.32	4.01	3.39	3.57	2.99	2.81	2.47
01/20/06	6.33	5.94	4.70	4.52	6.88	6.10	4.51	3.91	3.22	2.90	2.78	2.53	2.49	2.41
01/21/06	6.04	5.65	5.32	4.40	7.34	6.06	4.82	3.83	3.69	2.90	3.41	2.52	2.96	2.40
01/22/06	6.04	5.57	5.01	4.42	7.03	5.92	4.35	3.68	3.37	2.72	2.94	2.41	2.49	2.11
01/23/06	5.41	5.28	4.38	4.02	6.57	5.78	4.04	3.36	3.22	2.38	2.94	2.10	2.33	2.02
01/24/06	6.04	5.39	4.70	3.93	6.42	5.38	4.19	3.32	3.22	2.40	3.09	2.05	2.49	1.99

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
01/25/06	5.26	4.60	4.23	3.39	6.11	4.70	3.72	2.47	2.58	1.66	2.31	1.62	2.01	1.78
01/26/06	5.10	4.72	3.29	2.72	3.62	2.94	2.29	1.88	2.11	1.60	2.14	1.55	1.85	1.77
01/27/06	5.10	4.75	3.44	3.00	3.93	3.19	3.09	2.44	2.90	2.21	2.94	2.04	2.01	1.86
01/28/06	4.63	4.22	3.13	2.64	3.47	2.75	2.46	1.91	2.11	1.70	2.14	1.60	1.85	1.72
01/29/06	4.63	4.08	3.29	2.65	3.78	2.94	2.77	2.15	2.58	1.94	2.46	1.82	1.85	1.72
01/30/06	5.41	4.97	3.92	3.59	3.93	3.52	2.93	2.70	2.74	2.41	2.31	2.14	1.85	1.82
01/31/06	5.26	4.79	3.60	3.04	3.47	2.93	2.77	2.32	2.74	2.13	2.46	1.98	1.85	1.82
02/01/06	6.04	5.07	4.23	3.53	3.93	3.20	3.41	2.59	3.84	2.42	2.78	2.19	2.01	1.88
02/02/06	5.41	4.95	3.76	3.13	3.15	2.74	2.93	2.34	2.74	2.23	2.62	2.07	2.01	1.87
02/03/06	5.10	4.56	3.60	3.16	3.47	2.76	3.09	2.38	2.90	2.27	2.62	2.12	2.01	1.88
02/04/06	4.78	4.21	3.29	2.86	3.15	2.59	2.62	2.25	2.58	2.21	2.31	2.08	2.01	1.87
02/05/06	4.00	3.55	3.13	2.56	3.15	2.43	2.93	2.12	2.90	2.12	2.62	2.01	2.01	1.90
02/06/06	3.53	3.14	2.66	2.14	2.68	2.08	2.46	1.81	2.42	1.83	2.31	1.77	1.85	1.80
02/07/06	3.37	2.86	2.66	2.07	2.84	2.03	2.62	1.79	2.58	1.81	2.31	1.76	1.85	1.76
02/08/06	3.21	2.87	2.66	2.10	2.84	2.06	2.62	1.83	2.58	1.85	2.31	1.79	1.85	1.77
02/09/06	3.68	3.14	2.97	2.31	3.15	2.23	2.93	1.98	2.90	2.00	2.62	1.96	2.33	2.02
02/10/06	3.21	3.00	2.97	2.33	2.99	2.35	2.77	2.14	2.90	2.18	2.62	2.13	2.33	2.11
02/11/06	3.05	2.67	2.66	2.04	3.15	2.16	2.77	1.95	2.90	2.02	2.62	2.02	2.17	2.09
02/12/06	3.37	2.80	2.97	2.27	3.15	2.33	2.93	2.13	3.06	2.20	2.78	2.17	2.33	2.24
02/13/06	3.53	3.06	3.29	2.50	3.47	2.56	3.25	2.34	3.22	2.37	2.94	2.32	2.33	2.28
02/14/06	3.84	3.50	3.13	2.75	3.31	2.68	3.09	2.43	3.22	2.46	3.09	2.42	2.49	2.41
02/15/06	3.53	3.10	3.13	2.51	3.47	2.56	3.09	2.33	3.06	2.40	2.94	2.37	2.49	2.46
02/16/06	2.89	2.46	2.82	2.07	2.99	2.28	2.77	2.08	2.90	2.18	2.62	2.19	2.49	2.27
02/17/06	2.89	2.42	2.66	1.98	2.99	2.12	2.62	1.92	2.74	2.00	2.62	1.99	2.17	2.07
02/18/06	2.42	1.85	2.19	1.52	2.37	1.78	2.14	1.62	2.11	1.72	1.99	1.77	2.01	1.95
02/19/06	2.58	1.87	2.34	1.68	2.52	1.85	2.29	1.65	2.27	1.75	2.14	1.76	2.01	1.82
02/20/06	2.58	1.99	2.50	1.63	2.84	1.83	2.46	1.63	2.58	1.72	2.46	1.72	1.85	1.79
02/21/06	2.74	2.53	2.34	1.90	2.37	1.96	2.14	1.75	2.11	1.81	1.99	1.78	1.85	1.82
02/22/06	4.16	3.14	3.44	2.54	3.31	2.45	3.09	2.19	3.06	2.19	2.78	2.07	2.01	1.89
02/23/06	4.16	3.64	3.60	2.71	3.47	2.51	3.09	2.24	3.06	2.24	2.78	2.13	2.01	1.93
02/24/06	4.94	4.23	3.92	3.13	3.78	2.79	3.41	2.47	3.37	2.43	3.09	2.28	2.17	2.08
02/25/06	4.47	3.99	3.92	2.95	3.78	2.72	3.57	2.42	3.37	2.42	3.09	2.31	2.33	2.11
02/26/06	4.78	4.36	3.92	3.24	3.78	2.93	3.41	2.62	3.22	2.59	2.94	2.45	2.33	2.25

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
02/27/06	5.10	4.87	3.92	3.59	3.47	3.22	3.09	2.86	3.06	2.81	2.94	2.63	2.49	2.40
02/28/06	6.19	5.40	4.70	4.01	4.09	3.50	3.88	3.18	3.69	3.08	3.26	2.87	2.64	2.56
03/01/06	5.88	5.31	4.86	3.93	4.56	3.52	4.19	3.19	5.41	3.17	3.73	2.98	2.81	2.73
03/02/06	5.26	4.78	4.23	3.60	4.24	3.40	3.88	3.14	3.84	3.13	3.73	3.00	2.96	2.89
03/03/06	5.10	4.82	4.54	3.89	4.56	3.66	4.19	3.40	4.16	3.34	3.88	3.24	3.12	3.05
03/04/06	5.57	5.04	4.38	3.82	3.78	3.47	3.57	3.21	3.69	3.22	3.57	3.12	3.12	3.08
03/05/06	4.78	4.10	3.92	3.33	3.93	3.36	3.57	3.12	3.53	3.16	3.41	3.11	3.12	3.07
03/06/06	4.94	4.59	4.07	3.82	3.93	3.66	3.72	3.39	4.01	3.36	3.41	3.27	3.12	3.12
03/07/06	5.57	4.79	4.70	3.93	4.40	3.72	4.19	3.45	4.16	3.44	4.04	3.33	3.28	3.13
03/08/06	5.26	4.95	4.70	3.95	4.40	3.73	4.19	3.48	4.16	3.45	3.88	3.34	3.28	3.13
03/09/06	4.94	4.49	4.23	3.64	4.24	3.52	4.04	3.27	4.01	3.27	3.88	3.19	3.28	3.12
03/10/06	4.31	4.05	3.92	3.31	3.93	3.25	3.57	3.01	3.53	3.02	3.57	2.99	3.12	3.02
03/11/06	4.78	4.07	4.38	3.48	4.71	3.45	4.51	3.21	4.32	3.20	4.04	3.13	3.12	2.99
03/12/06	4.94	4.47	4.23	3.51	4.56	3.36	4.19	3.10	4.16	3.10	3.88	3.03	2.96	2.90
03/13/06	5.41	4.82	5.01	3.81	4.87	3.59	4.51	3.30	4.32	3.27	4.04	3.17	3.12	2.99
03/14/06	5.41	5.04	4.38	3.81	4.09	3.45	3.72	3.18	3.69	3.14	3.57	3.07	3.12	2.99
03/15/06	4.94	4.64	4.23	3.56	4.40	3.48	4.04	3.22	3.84	3.21	3.73	3.13	3.12	3.01
03/16/06	6.19	5.33	5.32	4.25	5.18	3.93	4.82	3.64	4.63	3.53	4.35	3.40	3.28	3.09
03/17/06	6.04	5.81	5.01	4.43	4.71	4.02	4.35	3.69	4.32	3.61	4.19	3.45	3.28	3.19
03/18/06	6.35	5.61	5.01	4.39	5.49	4.20	5.29	3.91	5.10	3.83	4.66	3.65	3.44	3.24
03/19/06	6.51	5.58	5.63	4.58	5.96	4.31	5.44	3.97	5.26	3.87	4.82	3.70	3.44	3.35
03/20/06	6.19	5.77	5.32	4.53	5.18	4.15	4.82	3.82	4.47	3.75	4.19	3.62	3.44	3.39
03/21/06	6.66	6.05	5.48	4.81	5.33	4.44	4.98	4.07	4.79	3.97	4.51	3.79	3.59	3.49
03/22/06	7.13	6.51	6.25	5.19	5.96	4.65	5.44	4.27	5.10	4.14	4.82	3.94	3.75	3.55
03/23/06	7.13	6.63	6.25	5.23	5.96	4.77	5.44	4.39	5.26	4.28	4.98	4.07	3.91	3.72
03/24/06	7.28	6.84	6.25	5.49	5.80	4.93	5.29	4.52	5.10	4.39	4.66	4.17	3.91	3.83
03/25/06	6.97	6.76	5.79	5.26	5.33	4.75	4.82	4.38	4.79	4.29	4.51	4.12	4.07	3.93
03/26/06	7.13	6.26	6.25	5.16	6.11	4.79	5.60	4.44	5.41	4.37	4.98	4.25	4.22	4.05
03/27/06	7.44	6.56	6.87	5.39	6.88	5.17	6.38	4.83	6.19	4.76	5.76	4.59	4.54	4.34
03/28/06	8.22	7.51	6.87	6.16	6.57	5.63	6.38	5.27	6.03	5.15	5.76	4.92	4.69	4.52
03/29/06	7.75	7.35	6.72	5.94	5.80	5.50	5.44	5.14	5.41	5.04	5.13	4.85	4.69	4.66
03/30/06	8.53	7.35	7.80	6.51	7.50	6.13	7.16	5.72	6.97	5.57	6.53	5.28	5.01	4.77
03/31/06	8.99	8.49	7.49	6.70	6.88	6.10	6.53	5.70	6.51	5.59	6.22	5.39	5.32	5.19

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
04/01/06	8.22	7.76	7.03	6.40	6.73	6.02	6.38	5.64	6.35	5.54	6.07	5.37	5.32	5.12
04/02/06	7.75	7.20	7.03	6.13	7.19	5.93	6.69	5.57	6.51	5.47	6.22	5.31	5.17	5.09
04/03/06	8.53	7.91	7.49	6.74	7.19	6.34	6.69	5.94	6.97	5.80	6.07	5.54	5.32	5.15
04/04/06	8.83	8.58	7.49	7.15	7.19	6.66	6.84	6.23	6.66	6.06	6.37	5.74	5.48	5.36
04/05/06	8.53	8.28	7.33	7.10	7.19	6.59	6.84	6.21	6.66	6.06	6.37	5.81	5.63	5.51
04/06/06	9.61	8.53	8.42	7.31	7.81	6.69	7.46	6.37	7.13	6.19	6.84	5.94	5.48	5.45
04/07/06	9.14	8.56	8.11	7.07	7.81	6.45	7.31	6.12	7.28	6.05	6.84	5.86	5.95	5.60
04/08/06	9.30	8.79	8.42	7.49	7.96	6.86	7.62	6.53	7.28	6.41	6.84	6.20	5.95	5.84
04/09/06	8.83	8.37	7.80	6.95	7.34	6.42	6.84	6.11	6.82	6.07	6.53	5.93	5.79	5.70
04/10/06	9.14	8.42	8.11	7.18	7.65	6.65	7.31	6.35	7.13	6.26	6.99	6.09	5.95	5.79
04/11/06	8.83	8.27	8.26	7.07	7.96	6.73	7.62	6.47	7.44	6.44	7.14	6.32	6.42	6.18
04/12/06	9.30	8.58	8.72	7.50	7.96	6.99	7.93	6.76	7.59	6.68	7.30	6.53	6.42	6.25
04/13/06	10.71	9.58	9.64	8.23	8.42	7.34	8.08	6.97	7.90	6.89	7.46	6.65	6.42	6.24
04/14/06	10.24	9.90	9.18	8.04	8.11	7.27	8.08	7.02	8.06	6.99	7.76	6.85	6.73	6.63
04/15/06	9.77	9.33	8.57	7.91	7.81	7.43	7.31	6.96	7.28	6.93	7.14	6.82	6.73	6.54
04/16/06	9.14	8.26	7.64	6.95	7.34	6.97	6.69	6.29	6.66	6.29	6.53	6.24	6.26	6.15
04/17/06	8.68	7.64	8.11	6.93	6.88	6.60	7.31	6.44	7.13	6.46	6.84	6.38	6.42	6.28
04/18/06	9.30	8.21	8.88	7.27	7.34	6.85	8.08	6.71	7.90	6.74	7.61	6.63	6.57	6.43
04/19/06	9.92	8.87	9.64	7.87	7.65	7.07	8.54	7.13	8.37	7.14	8.07	7.03	7.04	6.84
04/20/06	10.71	9.71	10.43	8.55	7.96	7.49	8.86	7.55	8.67	7.51	8.22	7.34	7.19	7.04
04/21/06	10.86	10.41	9.80	8.69	8.11	7.76	8.54	7.58	8.37	7.52	8.07	7.34	7.19	6.98
04/22/06	11.02	10.18	10.12	8.72	8.27	7.75	8.39	7.36	8.21	7.27	7.76	7.07	6.73	6.61
04/23/06	11.02	10.18	10.12	8.57	8.11	7.54	8.54	7.34	8.37	7.29	7.92	7.09	7.04	6.78
04/24/06	10.71	10.21	9.96	8.84	8.42	7.89	8.54	7.68	8.52	7.65	8.22	7.51	7.66	7.32
04/25/06	11.64	10.48	10.89	9.19	9.33	8.30	9.48	8.22	9.29	8.18	8.99	8.00	7.81	7.67
04/26/06	11.95	11.03	11.04	9.36	9.49	8.51	9.63	8.25	9.45	8.20	8.99	8.03	7.97	7.70
04/27/06	12.42	11.44	11.36	9.63	9.64	8.61	9.63	8.30	9.45	8.23	8.99	8.00	7.81	7.55
04/28/06	12.57	11.75	11.20	9.65	9.49	8.50	9.48	8.12	9.29	8.05	8.84	7.84	7.81	7.47
04/29/06	12.73	11.82	11.66	9.91	9.96	8.77	10.09	8.57	9.76	8.50	9.31	8.27	8.12	7.87
04/30/06	12.42	11.88	10.89	9.88	9.49	8.77	9.48	8.34	9.29	8.23	8.84	8.05	7.81	7.62
05/01/06	11.95	11.10	11.20	9.48	10.58	9.08	10.09	8.56	10.07	8.55	9.61	8.40	8.58	8.16
05/02/06	11.33	10.65	10.58	9.33	9.96	8.64	9.48	8.34	9.29	8.31	8.99	8.19	7.97	7.94
05/03/06	11.48	10.58	11.04	9.36	10.42	8.82	9.94	8.55	9.76	8.55	9.46	8.40	8.28	8.13

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
05/04/06	12.11	11.18	11.20	9.73	10.42	8.99	9.94	8.66	9.92	8.63	9.46	8.47	8.43	8.18
05/05/06	12.73	11.71	11.82	10.12	10.88	9.33	10.41	8.99	10.23	8.93	9.77	8.73	8.58	8.35
05/06/06	12.73	12.02	11.66	10.20	10.88	9.43	10.41	9.13	10.38	9.10	9.92	8.93	8.89	8.59
05/07/06	12.26	11.35	11.04	9.65	9.33	8.93	9.01	8.66	8.98	8.67	8.84	8.55	8.43	8.36
05/08/06	12.57	11.21	11.36	9.98	10.42	9.25	9.79	8.90	9.61	8.86	9.31	8.66	8.43	8.28
05/09/06	11.95	11.22	11.20	9.69	10.42	9.00	9.79	8.71	9.76	8.71	9.31	8.57	8.28	8.25
05/10/06	12.42	11.40	11.82	9.99	11.04	9.36	10.56	9.09	10.38	9.08	10.08	8.92	8.89	8.62
05/11/06	13.35	12.40	12.43	10.78	11.50	9.87	10.87	9.52	10.69	9.45	10.23	9.25	9.05	8.84
05/12/06	13.66	12.94	12.12	10.89	10.88	9.67	10.25	9.24	10.07	9.13	9.61	8.92	8.58	8.41
05/13/06	13.35	12.66	12.43	10.71	11.50	9.80	10.87	9.46	10.69	9.41	10.39	9.21	9.05	8.79
05/14/06	14.13	13.24	12.90	11.20	11.81	10.05	11.03	9.62	10.85	9.51	10.39	9.30	9.21	8.82
05/15/06	14.60	13.70	13.06	11.46	11.96	10.21	11.33	9.79	11.01	9.67	10.54	9.43	9.36	8.92
05/16/06	14.76	14.03	13.36	11.71	12.12	10.44	11.49	10.03	11.16	9.91	10.70	9.68	9.52	9.15
05/17/06	15.23	14.44	13.36	11.88	11.81	10.39	11.18	9.94	10.85	9.79	10.39	9.55	9.21	8.96
05/18/06	14.76	14.29	12.74	11.68	11.50	10.31	11.03	9.91	11.01	9.80	10.54	9.58	9.36	9.05
05/19/06	15.56	14.38	13.36	11.96	11.81	10.47	11.18	9.97	11.01	9.78	10.54	9.53	9.05	8.91
05/20/06	15.23	14.76	13.06	12.00	11.50	10.39	10.72	9.89	10.54	9.72	10.08	9.45	9.21	8.89
05/21/06	14.76	13.70	12.28	11.19	10.88	9.94	10.25	9.54	10.07	9.48	9.77	9.30	9.21	8.96
05/22/06	13.19	12.91	11.51	10.94	10.58	9.93	10.25	9.55	10.07	9.48	9.77	9.33	9.21	9.01
05/23/06	14.28	12.97	12.90	11.26	11.66	10.29	11.03	9.87	10.69	9.78	10.39	9.57	9.21	9.11
05/24/06	14.76	13.93	13.52	11.82	12.27	10.65	11.49	10.20	11.31	10.13	10.70	9.87	9.52	9.40
05/25/06	14.92	14.15	13.36	11.95	11.96	10.66	11.33	10.22	11.16	10.10	10.70	9.90	9.52	9.45
05/26/06	14.28	13.37	12.59	11.28	10.88	10.25	10.41	9.89	10.38	9.86	10.23	9.72	9.67	9.51
05/27/06	12.73	11.98	11.36	10.43	10.27	9.92	9.94	9.69	9.92	9.73	9.92	9.67	9.67	9.61
05/28/06	12.26	11.34	11.51	10.50	11.19	10.22	10.72	9.95	10.69	9.97	10.39	9.84	9.67	9.67
05/29/06	12.73	12.10	12.28	11.04	11.66	10.47	11.33	10.16	11.16	10.14	10.70	9.96	9.67	9.67
05/30/06	14.13	12.85	13.36	11.51	12.42	10.73	11.80	10.33	11.47	10.28	11.01	10.07	9.83	9.70
05/31/06	14.60	13.74	13.82	12.00	12.73	10.95	11.96	10.51	11.78	10.41	11.16	10.16	9.83	9.66
06/01/06	15.56	14.66	14.44	12.67	13.04	11.26	12.42	10.77	12.09	10.56	11.32	10.22	9.67	9.60
06/02/06	15.56	15.18	13.82	12.63	12.27	11.06	11.80	10.62	11.47	10.42	10.85	10.08	9.67	9.57
06/03/06	16.03	14.93	14.13	12.71	13.19	11.45	12.73	11.03	12.24	10.76	11.62	10.33	9.67	9.58
06/04/06	17.94	16.45	15.07	13.54	13.66	11.70	13.19	11.25	12.71	10.93	11.78	10.45	9.67	9.56
06/05/06	18.27	16.93	15.55	13.83	14.27	11.97	13.81	11.45	13.18	11.05	12.24	10.50	9.67	9.55

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
06/06/06	18.43	17.41	15.87	14.44	14.58	12.25	13.97	11.74	13.49	11.29	12.39	10.67	9.67	9.59
06/07/06	17.94	17.35	15.39	14.06	13.19	11.46	11.96	10.86	11.16	10.45	10.54	10.05	9.67	9.60
06/08/06	18.11	16.75	15.55	13.56	13.35	11.66	12.73	11.16	12.24	10.83	11.47	10.41	9.83	9.68
06/09/06	17.62	16.00	14.29	12.55	11.66	10.91	11.18	10.43	11.01	10.29	10.70	10.08	9.98	9.77
06/10/06	15.39	14.47	13.67	12.17	12.42	11.09	11.80	10.66	11.62	10.57	11.16	10.36	9.98	9.93
06/11/06	15.23	14.71	13.67	12.33	12.58	11.23	11.96	10.79	11.62	10.67	11.32	10.41	9.98	9.98
06/12/06	15.07	14.53	13.36	12.30	12.42	11.24	11.96	10.81	11.62	10.68	11.16	10.43	9.98	9.96
06/13/06	15.23	14.59	13.36	12.54	12.73	11.39	12.27	10.93	11.93	10.80	11.32	10.50	10.14	10.02
06/14/06	14.92	14.26	12.90	12.20	11.96	11.10	11.49	10.70	11.47	10.64	11.01	10.41	10.29	10.13
06/15/06	14.92	14.20	13.98	12.42	12.89	11.46	12.27	11.04	12.09	10.93	11.62	10.70	10.29	10.26
06/16/06	16.19	14.97	14.92	12.99	13.66	11.79	13.04	11.34	12.87	11.20	12.08	10.84	10.29	10.15
06/17/06	17.30	16.25	15.23	13.72	13.96	12.02	13.35	11.56	13.02	11.30	12.24	10.88	10.29	10.19
06/18/06	17.94	16.57	15.55	13.86	14.12	12.08	13.51	11.61	13.18	11.33	12.39	10.93	10.45	10.26
06/19/06	18.11	16.99	15.71	14.17	14.27	12.29	13.66	11.80	13.33	11.51	12.39	11.06	10.45	10.36
06/20/06	17.78	16.70	15.39	13.95	14.27	12.25	13.81	11.79	13.49	11.52	12.55	11.08	10.45	10.39
06/21/06	18.59	17.00	15.55	14.18	14.90	12.45	14.28	11.98	13.95	11.69	13.17	11.23	10.61	10.52
06/22/06	19.58	17.70	16.18	14.52	15.37	12.85	14.75	12.34	14.42	12.00	13.48	11.47	10.76	10.58
06/23/06	20.56	18.61	16.81	15.22	15.69	13.26	15.07	12.68	14.73	12.25	13.63	11.67	10.92	10.64
06/24/06	21.54	19.46	17.77	15.94	16.01	13.57	15.38	12.89	14.89	12.41	13.79	11.77	10.92	10.71
06/25/06	22.55	20.55	17.93	16.42	16.16	13.73	15.54	13.05	15.05	12.54	13.79	11.88	10.92	10.79
06/26/06	22.89	21.07	18.89	16.99	16.63	14.07	15.86	13.33	15.37	12.80	14.09	12.08	11.07	10.88
06/27/06	23.41	21.73	20.03	18.09	16.79	14.47	16.02	13.61	15.53	12.99	14.09	12.20	11.22	10.95
06/28/06	23.23	21.98	19.06	17.83	16.16	14.24	15.22	13.41	14.42	12.77	13.63	12.07	11.07	11.00
06/29/06	22.21	21.11	18.57	17.53	15.37	13.97	14.75	13.19	14.11	12.64	13.63	12.03	11.38	11.09
06/30/06	23.06	21.05	19.54	17.48	16.94	14.47	16.33	13.74	15.68	13.14	14.41	12.38	11.38	11.18
07/01/06	23.23	21.78	20.03	18.33	17.11	14.66	16.49	13.84	15.68	13.17	14.41	12.40	11.38	11.25
07/02/06	22.89	21.79	19.22	17.92	16.32	14.47	15.86	13.73	15.37	13.11	14.41	12.42	11.53	11.38
07/03/06	22.89	21.33	19.87	17.92	17.27	14.79	16.49	14.04	15.84	13.47	14.72	12.74	11.53	11.44
07/04/06	23.06	21.99	19.38	18.03	16.01	14.49	15.54	13.72	15.21	13.10	14.41	12.48	11.69	11.53
07/05/06	22.04	21.02	19.22	17.49	16.32	14.44	15.70	13.77	15.21	13.25	14.25	12.66	11.84	11.66
07/06/06	21.71	20.90	19.22	17.87	16.79	14.96	16.02	14.20	15.37	13.60	14.25	12.92	11.84	11.74
07/07/06	22.21	20.90	19.71	17.98	17.27	14.95	16.65	14.19	16.00	13.61	14.87	12.95	12.00	11.85
07/08/06	22.55	21.23	19.71	17.95	17.42	14.92	16.65	14.18	16.16	13.65	15.19	13.02	12.31	12.01

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
07/09/06	23.06	21.66	20.19	18.53	17.58	15.29	16.97	14.48	16.32	13.90	15.19	13.21	12.31	12.06
07/10/06	23.58	22.29	20.19	18.80	17.42	15.33	16.81	14.53	16.16	13.94	15.03	13.15	12.47	12.23
07/11/06	23.41	22.26	20.19	18.79	17.91	15.49	17.13	14.72	16.48	14.14	15.51	13.48	12.47	12.38
07/12/06	23.23	22.06	20.03	18.76	17.42	15.45	16.81	14.66	16.32	14.09	15.19	13.44	12.62	12.46
07/13/06	22.72	21.67	20.19	18.50	17.74	15.46	17.13	14.72	16.48	14.20	15.51	13.59	12.78	12.55
07/14/06	23.23	21.92	20.68	18.92	18.07	15.75	17.44	14.99	16.79	14.44	15.82	13.81	12.93	12.74
07/15/06	23.75	22.40	20.84	19.28	18.23	15.92	17.61	15.14	16.95	14.58	15.98	13.93	12.93	12.83
07/16/06	23.75	22.67	20.84	19.37	18.39	16.06	17.76	15.23	17.11	14.68	16.14	14.04	13.09	12.95
07/17/06	23.75	22.70	20.84	19.45	18.55	16.23	17.92	15.42	17.27	14.86	16.14	14.19	13.24	13.05
07/18/06	23.41	22.20	20.68	19.18	18.23	16.06	17.61	15.30	17.11	14.76	15.98	14.14	13.24	13.14
07/19/06	22.89	21.84	20.19	18.82	18.07	15.93	17.61	15.21	16.95	14.69	15.98	14.10	13.40	13.24
07/20/06	23.06	21.83	21.01	19.16	18.71	16.24	18.08	15.54	17.43	15.04	16.46	14.44	13.40	13.33
07/21/06	23.92	22.59	21.33	19.73	19.03	16.60	18.41	15.87	17.75	15.30	16.77	14.61	13.56	13.45
07/22/06	24.44	23.23	22.33	20.33	19.03	16.83	18.41	16.06	17.91	15.46	16.77	14.77	13.71	13.56
07/23/06	25.13	23.92	22.83	20.99	19.19	17.08	18.57	16.26	17.91	15.61	16.93	14.88	13.86	13.64
07/24/06	25.31	24.13	22.49	21.05	19.36	17.17	18.57	16.34	18.07	15.73	16.93	15.01	13.86	13.74
07/25/06	25.13	24.06	22.16	20.81	19.03	17.02	18.24	16.18	17.75	15.60	16.77	14.92	14.02	13.81
07/26/06	24.78	23.73	22.16	20.44	19.19	17.06	18.57	16.26	17.91	15.68	16.93	15.02	14.02	13.88
07/27/06	24.44	23.40	22.00	20.27	19.36	17.01	18.73	16.21	18.07	15.68	17.08	15.05	14.17	14.01
07/28/06	24.44	23.42	22.16	20.47	19.19	17.15	18.57	16.35	18.07	15.79	17.08	15.15	14.17	14.08
07/29/06	24.27	23.23	21.67	20.19	19.19	17.09	18.57	16.29	18.07	15.77	17.08	15.16	14.33	14.14
07/30/06	23.92	22.44	20.84	19.58	18.71	16.81	18.08	16.06	17.75	15.61	16.93	15.08	14.33	14.25
07/31/06	22.21	20.64	19.22	18.20	18.39	16.37	17.92	15.74	17.59	15.37	16.77	14.95	14.33	14.27
08/01/06	21.21	20.16	19.87	18.36	18.55	16.60	17.92	15.97	17.59	15.60	16.93	15.12	14.48	14.37
08/02/06	21.38	20.26	19.71	18.28	18.71	16.46	18.08	15.87	17.75	15.56	17.08	15.14	14.64	14.45
08/03/06	21.71	20.47	20.35	18.65	19.03	16.76	18.41	16.13	18.07	15.79	17.24	15.31	14.64	14.51
08/04/06	22.21	20.97	20.84	19.22	19.19	17.05	18.73	16.40	18.39	16.02	17.56	15.52	14.80	14.65
08/05/06	22.21	21.19	21.01	19.47	19.03	17.12	18.57	16.48	18.23	16.08	17.56	15.60	14.96	14.77
08/06/06	22.55	21.41	20.68	19.28	19.36	17.30	18.89	16.63	18.39	16.25	17.56	15.72	15.12	14.85
08/07/06	24.34	22.36	22.00	19.77	19.84	17.59	19.22	16.87	18.72	16.45	17.88	15.89	15.12	14.94
08/08/06	23.99	22.17	21.33	19.96	19.36	17.44	18.73	16.72	18.23	16.32	17.56	15.83	15.12	15.02
08/09/06	23.13	21.57	20.68	19.37	19.19	17.26	18.73	16.66	18.39	16.35	17.72	15.90	15.28	15.16
08/10/06	22.63	21.16	20.51	19.12	19.52	17.37	19.06	16.80	18.88	16.50	18.04	16.05	15.44	15.29

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
08/11/06	22.30	20.61	20.35	18.91	19.19	17.30	18.73	16.76	18.39	16.47	17.88	16.07	15.59	15.35
08/12/06	21.47	20.18	20.03	18.59	19.03	17.16	18.57	16.65	18.39	16.42	17.88	16.05	15.59	15.47
08/13/06	21.47	19.74	20.03	18.35	19.36	17.12	18.89	16.64	18.72	16.45	18.04	16.13	15.76	15.54
08/14/06	21.80	19.97	20.51	18.83	19.52	17.45	19.22	16.96	18.88	16.72	18.20	16.33	15.91	15.65
08/15/06	22.63	21.01	20.84	19.38	19.52	17.70	19.22	17.17	18.88	16.90	18.20	16.50	15.91	15.72
08/16/06	22.30	20.61	20.51	19.07	19.19	17.64	19.06	17.13	19.04	16.90	18.36	16.52	15.91	15.82
08/17/06	21.13	19.49	20.03	18.41	19.36	17.38	18.89	16.93	18.88	16.76	18.20	16.43	16.07	15.94
08/18/06	21.47	19.81	20.19	18.59	19.52	17.50	19.22	17.05	19.04	16.87	18.36	16.54	16.07	15.99
08/19/06	21.47	19.82	20.19	18.73	19.68	17.60	19.38	17.15	19.21	16.98	18.52	16.64	16.23	16.08
08/20/06	21.63	19.91	20.19	18.78	19.68	17.64	19.38	17.19	19.21	17.01	18.52	16.69	16.39	16.15
08/21/06	21.30	20.17	20.03	18.91	19.52	17.83	19.22	17.34	19.04	17.12	18.52	16.75	16.39	16.22
08/22/06	21.80	20.28	20.68	19.14	19.84	17.95	19.38	17.47	19.21	17.26	18.68	16.92	16.54	16.31
08/23/06	21.13	20.08	19.87	18.92	19.52	17.79	19.22	17.32	19.04	17.12	18.52	16.82	16.54	16.37
08/24/06	19.99	19.08	18.89	18.10	18.55	17.30	18.24	16.92	18.07	16.79	17.72	16.62	16.54	16.44
08/25/06	20.31	19.03	19.54	18.27	19.19	17.68	18.73	17.28	18.56	17.15	18.20	16.87	16.71	16.50
08/26/06	20.64	19.06	19.71	18.27	19.68	17.67	19.38	17.34	19.21	17.24	18.68	17.01	16.71	16.58
08/27/06	21.30	19.54	20.19	18.78	20.00	18.06	19.55	17.63	19.54	17.47	18.84	17.16	16.86	16.62
08/28/06	21.47	19.89	20.51	19.12	20.64	18.42	20.36	17.98	20.03	17.78	19.49	17.42	16.86	16.68
08/29/06	22.13	20.49	21.33	19.75	20.48	18.74	20.03	18.15	19.86	17.84	19.17	17.42	16.86	16.74
08/30/06	21.13	19.36	20.03	18.78	19.52	17.94	18.73	17.40	18.72	17.19	18.52	16.96	16.86	16.76
08/31/06	19.18	17.64	18.89	17.22	19.03	17.20	18.89	16.87	19.04	16.86	18.84	16.86	17.02	16.79
09/01/06	19.02	17.27	19.06	17.15	19.43	17.49	19.44	17.16	19.37	17.14	19.17	17.03	17.02	16.84
09/02/06	19.51	17.64	20.03	17.87	19.75	17.99	19.60	17.53	19.54	17.40	19.17	17.21	17.02	16.87
09/03/06	19.18	17.97	19.71	18.20	19.75	18.18	19.44	17.63	19.21	17.48	18.68	17.19	17.02	16.91
09/04/06	20.47	18.74	21.17	19.21	20.07	18.56	20.09	18.05	19.54	17.76	19.17	17.45	17.18	16.94
09/05/06	21.97	20.09	21.50	19.90	20.39	18.95	20.41	18.34	19.86	18.07	19.33	17.66	17.18	16.98
09/06/06	21.97	20.61	21.33	20.01	19.91	18.83	21.40	18.22	19.37	17.95	19.01	17.57	17.18	17.04
09/07/06	21.30	20.20	20.35	19.36	19.75	18.67	19.60	18.01	19.37	17.84	18.84	17.54	17.18	17.07
09/08/06	20.64	19.49	20.51	19.07	20.07	18.71	19.76	18.10	19.70	17.95	19.17	17.62	17.18	17.08
09/09/06	21.13	19.66	20.68	19.20	19.75	18.57	19.76	18.04	19.54	17.85	19.01	17.56	17.18	17.08
09/10/06	20.64	19.38	20.35	18.86	19.91	18.48	19.92	17.96	19.54	17.82	19.17	17.58	17.34	17.12
09/11/06	20.31	18.76	20.03	18.39	19.75	18.19	19.76	17.72	19.54	17.60	19.17	17.43	17.34	17.17
09/12/06	20.15	18.61	20.03	18.35	19.91	18.31	20.41	17.90	19.70	17.74	19.33	17.55	17.34	17.20

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
09/13/06	20.31	18.83	20.51	18.65	19.91	18.49	20.57	17.59	19.70	17.83	19.33	17.58	17.34	17.23
09/14/06	19.18	17.56	18.41	17.34	18.94	17.22	17.33	15.10	17.75	16.77	17.88	16.85	17.34	17.20
09/15/06	17.24	15.45	16.49	15.30	17.17	16.27	17.97	12.91	17.59	16.26	18.04	16.58	17.50	17.27
09/16/06	15.65	14.30	16.02	14.85	17.49	16.25	17.97	13.06	17.75	16.32	17.88	16.67	17.34	17.21
09/17/06	16.28	14.76	17.13	15.37	18.14	16.65	18.62	13.86	18.56	16.71	18.68	16.92	17.34	17.21
09/18/06	16.28	15.11	17.45	15.83	18.46	17.00		14.99	18.72	16.90	18.68	16.98	17.34	17.09
09/19/06	15.81	14.95	16.34	15.74	17.98	16.65		14.56	17.43	16.42	16.93	16.57	17.18	17.05
09/20/06	15.81	14.59	16.65	15.42	17.66	16.48		15.25	17.75	16.48	17.88	16.71	17.18	17.03
09/21/06	16.44	15.56	17.45	16.18	17.49	16.78		16.06	17.75	16.69	18.04	16.81	17.02	16.94
09/22/06	15.81	14.67	16.65	15.06	17.17	15.98		14.37	17.75	16.03	18.04	16.33	17.02	16.81
09/23/06	15.81	14.47	16.81	14.96	17.66	16.20		12.82	18.07	16.26	18.20	16.48	16.86	16.74
09/24/06	15.97	14.62	17.13	15.27	17.82	16.42		13.09	18.23	16.38	18.20	16.52	16.86	16.70
09/25/06	16.44	14.97	17.45	15.66	17.98	16.66		13.86	18.39	16.54	18.36	16.61	16.86	16.62
09/26/06	16.76	15.32	17.77	15.94	18.14	16.84	18.13	13.01	18.39	16.59	18.36	16.60	16.71	16.58
09/27/06	17.08	15.62	17.93	16.10	18.14	16.87	18.29	16.64	18.39	16.61	18.36	16.57	16.71	16.46
09/28/06	17.40	16.02	18.09	16.44	18.30	17.04	18.46	16.76	18.39	16.69	18.20	16.60	16.54	16.43
09/29/06	17.72	16.29	18.41	16.60	18.30	17.06	18.29	16.71	18.39	16.63	18.20	16.54	16.54	16.40
09/30/06	16.92	15.97	17.45	16.17	17.82	16.67	17.81	16.34	17.91	16.30	17.88	16.26	16.39	16.24
10/01/06	16.44	15.55	16.97	15.78	17.49	16.51	17.17	16.12	17.27	16.05	17.24	16.04	16.39	16.18
10/02/06	15.81	15.06	15.55	15.19	16.69	15.92	16.37	15.64	16.16	15.57	16.29	15.65	16.07	16.07
10/03/06	15.97	14.77	16.81	15.16	17.42	16.06	17.52	15.99	17.59	15.91	17.40	15.94	16.07	15.95
10/04/06	16.44	15.55	17.77	16.20	17.58	16.67	17.36	16.44	17.11	16.18	17.24	16.09	16.07	15.96
10/05/06	16.92	15.71	17.61	16.08	17.74	16.52	17.68	16.38	17.75	16.22	17.72	16.16	16.07	15.96
10/06/06	16.28	15.60	16.65	15.80	17.27	16.30	17.21	16.07	16.95	15.86	16.61	15.83	15.91	15.90
10/07/06	15.65	14.81	16.34	15.06	16.63	15.87	16.57	15.74	16.63	15.62	16.61	15.69	15.91	15.77
10/08/06	15.02	14.03	15.55	14.27	16.16	15.17	16.24	15.09	16.48	15.07	16.61	15.27		
10/09/06	14.23	13.43	14.60	13.81	15.84	14.99	15.61	14.91	15.68	14.89	15.98	15.09		
10/10/06	13.77	12.78	14.66	13.31	15.69	14.77	15.77	14.76	16.00	14.75	16.29	15.00		
10/11/06	13.92	12.75	14.98	13.55	15.53	14.68	15.77	14.64	15.84	14.59	15.98	14.83		
10/12/06	13.77	12.70	14.82	13.49	15.69	14.55	15.77	14.51	16.00	14.43	16.14	14.66		
10/13/06	13.92	12.77	14.98	13.58	15.84	14.77	15.93	14.71	16.00	14.55	16.14	14.71		
10/14/06	14.08	12.93	14.98	13.72	15.84	14.78	15.77	14.63	15.68	14.39	15.82	14.52		
10/15/06	13.46	12.44	13.88	13.30	15.22	14.29	14.82	14.07	14.42	13.82	14.72	13.92		

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
10/16/06	12.84	12.15	13.88	12.93	14.58	13.87	14.51	13.69	14.26	13.46	14.87	13.76		
10/17/06	13.00	12.15	13.73	12.64	14.43	13.50	14.35	13.33	14.11	13.06	15.03	13.38		
10/18/06	13.00	11.93	13.27	12.18	13.96	13.12	13.88	12.89	13.79	12.61	14.41	13.01		
10/19/06	13.16	12.55	13.58	12.78	14.43	13.80	14.19	13.67	13.95	13.32	13.94	13.50		
10/20/06	13.46	12.55	14.04	12.91	14.27	13.58	14.04	13.36	13.79	12.97	14.72	13.14		
10/21/06	12.69	11.77	12.96	11.81	13.66	12.72	13.27	12.38	12.87	11.76	14.41	12.01		
10/22/06	12.07	11.13	12.49	11.21	13.50	12.40	13.27	12.08	12.87	11.51	14.09	11.80		
10/23/06	11.91	10.94	12.49	11.17	13.35	12.42	13.12	12.05	12.56	11.40	13.94	11.68		
10/24/06	11.76	10.90	12.34	11.07	13.35	12.40	13.12	12.08	12.71	11.42	13.79	11.69		
10/25/06	11.29	10.66	11.41	10.69	12.73	11.99	12.49	11.62	12.09	10.88	12.24	10.98		
10/26/06	10.83	9.99	10.79	9.91	11.66	10.93	11.41	10.54	10.85	9.74	11.93	10.05		
10/27/06	10.83	9.88	11.10	9.76	12.12	11.06	11.87	10.76	11.78	10.15	12.55	10.59		
10/28/06	10.98	9.96	11.41	10.01	12.58	11.37	12.34	11.18	12.09	10.80	12.71	11.19		
10/29/06	10.83	9.94	11.41	10.17	12.58	11.43	12.34	11.20	11.93	10.82	12.55	11.17		
10/30/06	10.05	9.00	10.02	9.17	11.50	10.14	11.25	9.81	10.54	9.32	10.70	9.78		
10/31/06	8.50	7.60	8.16	7.41	9.49	8.66	9.23	8.35	8.67	7.94	10.08	8.73		
11/01/06	7.42	6.63	7.54	6.55	9.33	8.29	9.03	8.03	8.67	7.65	9.61	8.36		
11/02/06	7.42	6.72	7.86	7.07	9.64	8.77	9.49	8.48	9.14	8.08	9.46	8.74		
11/03/06	9.74	8.41	10.17	8.87	11.66	10.50	11.52	10.37	11.31	10.04	11.47	10.35		
11/04/06	12.07	10.85	12.49	11.19	13.19	12.15	13.07	11.95	12.56	11.57	12.86	11.55		
11/05/06	12.07	11.87	12.18	11.81	12.89	12.35	12.29	11.91	11.62	11.41	11.47	11.20		
11/06/06	13.16	12.58	13.27	12.58	13.35	12.67	12.61	12.14	12.09	11.56	11.78	11.25		
11/07/06	14.08	13.51	13.88	13.27	13.96	13.20	13.38	12.68	12.87	12.10	12.55	11.67		
11/08/06	14.08	13.43	13.73	13.09	13.66	12.75	13.23	12.20	12.40	11.59	11.78	11.20		
11/09/06	12.22	10.88	11.41	10.19	11.34	10.18	10.74	9.55	9.92	8.91	9.61	8.88		
11/10/06	9.58	8.67	8.93	8.30	9.64	9.01	9.03	8.31	8.21	7.67	8.69	7.82		
11/11/06	9.58	8.80	9.55	8.66	10.27	9.51	9.34	8.71	8.67	8.13	8.99	8.25		
11/12/06	8.81	8.25	8.63	7.94	9.64	8.83	9.03	8.08	8.52	7.72	9.31	8.11		
11/13/06	8.96	8.52	8.63	8.14	9.96	9.32	9.18	8.50	8.67	8.05	8.84	8.24		
11/14/06	9.43	8.79	8.93	8.32	9.96	9.31	9.49	8.56	8.67	8.17	9.31	8.40		
11/15/06	8.34	7.91	8.01	7.47	9.49	8.75	8.72	7.94	8.06	7.41	8.22	7.53		
11/16/06	9.58	8.58	10.02	8.69	10.58	9.72	9.81	8.92	8.98	8.19	9.46	8.21		
11/17/06	9.58	9.16	9.39	8.76	10.11	9.53	9.49	8.84	8.83	8.19	9.15	8.40		

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
11/18/06	10.05	9.37	9.71	8.90	10.88	9.94	10.27	9.36	9.61	8.76	9.92	8.79		
11/19/06	9.74	9.27	9.39	8.91	10.58	9.86	9.96	9.19	9.14	8.53	9.31	8.58		
11/20/06	10.52	9.87	10.02	9.49	10.88	10.18	10.27	9.45	9.45	8.89	9.31	8.86		
11/21/06	11.44	10.64	10.79	10.14	10.73	10.06	10.12	9.56	9.76	9.28	9.92	9.16		
11/22/06	10.67	10.14	9.86	9.05	9.96	9.27	9.34	8.77	8.98	8.39	8.84	8.17		
11/23/06	9.27	8.65	8.47	8.09	9.33	8.67	8.56	7.84	7.74	7.32	8.07	7.36		
11/24/06	8.19	7.74	8.01	7.28	9.03	8.16	8.26	7.33	7.59	6.73	7.61	6.77	8.74	8.30
11/25/06	8.04	7.64	8.01	7.33	9.03	8.29	8.26	7.46	7.74	6.97	7.92	7.19	8.43	8.04
11/26/06	7.73	7.00	7.23	6.56	8.57	7.70	7.63	6.81	6.97	6.40	6.99	6.63	8.28	7.96
11/27/06	7.11	6.86	6.93	6.50	7.96	7.64	7.17	6.72	6.51	6.22	6.84	6.44	8.12	7.76
11/28/06	6.49	5.73	5.99	5.36	7.50	6.69	6.70	5.69	5.88	5.27	6.22	5.55	7.81	7.40
11/29/06	4.77	3.82	4.12	3.40	5.96	4.91	4.83	3.82	4.01	3.44	4.82	4.09	7.66	7.10
11/30/06	3.99	3.73	3.81	3.26	5.80	5.11	5.14	4.22	4.47	3.64	4.98	4.16	7.35	7.02
12/01/06	4.46	3.83	4.12	3.48	6.11	5.24	5.67	4.54	5.10	3.97	5.76	4.69	7.35	6.98
12/02/06	4.93	4.29	4.43	3.79	6.26	5.51	5.67	4.84	4.79	4.17	5.60	4.66	7.04	6.72
12/03/06	4.30	3.87	3.81	3.30	5.49	4.91	4.88	4.15	4.16	3.46	4.82	3.92	6.73	6.37
12/04/06	4.14	3.49	3.66	2.90	5.33	4.58	4.73	3.84	3.84	3.10	4.66	3.68	6.57	6.15
12/05/06	4.62	3.78	3.97	3.08	5.49	4.82	5.04	4.15	4.32	3.42	4.98	3.97	6.42	6.03
12/06/06	4.62	4.02	4.12	3.45	5.80	5.12	5.36	4.50	4.63	3.76	5.29	4.25	6.42	6.00
12/07/06	4.62	4.00	4.28	3.57	5.96	5.25	5.67	4.68	4.94	3.96	5.29	4.36	6.26	5.83
12/08/06	4.77	4.09	4.75	3.85	6.11	5.38	5.82	4.86	5.10	4.08	5.44	4.42	6.11	5.76
12/09/06	5.39	4.77	5.06	4.46	6.73	5.76	6.29	5.31	5.41	4.52	5.44	4.79	5.79	5.66
12/10/06	6.33	5.74	5.84	5.26	6.88	6.16	6.29	5.64	5.41	4.80	5.44	4.89	5.79	5.62
12/11/06	6.33	6.00	6.15	5.62	7.03	6.47	6.60	5.96	5.72	5.11	5.91	5.14	5.79	5.61
12/12/06	7.42	6.92	6.77	6.41	7.50	7.04	6.91	6.55	6.03	5.63	5.76	5.46	5.63	5.56
12/13/06	8.19	7.86	7.39	7.05	7.81	7.38	7.22	6.85	6.19	5.92	5.91	5.67	5.63	5.56
12/14/06	8.81	8.37	7.86	7.53	7.96	7.52	7.38	6.96	6.51	6.12	6.22	5.81	5.63	5.54
12/15/06	8.50	8.07	7.70	7.30	7.96	7.42	7.38	6.86	6.35	5.97	6.22	5.71	5.63	5.50
12/16/06	7.11	5.86	5.99	4.96	6.26	5.32	5.67	4.60	4.63	3.71	4.66	3.76	5.48	5.22
12/17/06	4.93	4.28	3.97	3.32	4.87	3.93	3.94	3.13	2.90	2.29	3.57	2.72	5.32	4.90
12/18/06	3.83	3.29	2.87	2.30	4.09	3.33	3.32	2.59	2.58	1.75	3.26	2.28	5.01	4.65
12/19/06	3.37	2.84	2.56	1.95	3.78	3.10	3.32	2.42	2.42	1.58	3.09	2.14	4.69	4.42
12/20/06	3.37	2.80	2.56	1.86	3.93	3.16	3.48	2.54	2.55	1.76	3.26	2.26	4.69	4.30

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
12/21/06	3.21	2.81	2.39	1.95	3.93	3.30	3.32	2.68	2.23	1.76	2.46	2.23	4.22	4.15
12/22/06	4.46	3.77	3.49	2.71	4.56	3.74	4.10	3.22	3.18	2.35	3.73	2.65	4.54	4.13
12/23/06	3.83	3.50	3.34	2.81	5.02	4.02	4.26	3.43	3.02	2.46	2.94	2.61	4.07	3.94
12/24/06	4.62	4.05	4.28	3.75	5.33	4.61	4.73	4.04	3.81	3.17	4.19	3.36	4.22	3.93
12/25/06	5.10	4.81	4.12	3.91	5.80	5.21	5.20	4.72	4.13	3.82	4.04	3.72	4.07	3.89
12/26/06	6.19	5.59			6.57	5.69	5.82	5.21	4.91	4.33	4.66	4.23	4.07	3.94
12/27/06	6.97	6.50			6.88	6.27	6.44	5.73	5.38	4.80	4.98	4.48	4.07	3.87
12/28/06	5.88	4.95			5.80	4.36	5.04	3.46	3.81	2.49	3.41	2.46	3.91	3.57
12/29/06	4.16	3.76			4.40	3.42	3.48	2.51	2.55	1.69	2.94	1.99	3.59	3.35
12/30/06	4.16	3.62			4.40	3.52	3.48	2.61	2.71	1.81	3.09	2.05	3.28	3.07
12/31/06	4.47	4.03			4.56	3.79	3.63	2.87	2.87	2.04	2.94	2.17	2.96	2.82
01/01/07	4.31	4.01			4.71	3.80	3.79	2.98	2.87	2.13	2.94	2.26	3.12	2.94
01/02/07	4.63	4.36			5.18	4.39	4.10	3.51	3.18	2.69	3.26	2.71	2.81	2.66
01/03/07	5.57	4.99			6.11	5.13	4.73	3.91	3.66	3.20	3.26	3.03	2.64	2.57
01/04/07	6.19	5.73			5.96	5.24	4.57	3.94	3.66	3.27	3.88	2.99	3.12	2.67
01/05/07	5.41	4.54			5.02	4.27	3.79	2.75	7.41	2.06	2.46	1.88	2.96	2.70
01/06/07	4.94	4.35			4.62	3.86	3.16	2.40	2.55	1.77	2.62	1.81	2.81	2.52
01/07/07	5.10	4.49			5.40	3.97	3.79	2.65	3.02	1.98	2.78	1.86	3.12	2.29
01/08/07	6.66	5.79			6.18	4.89	4.88	3.68	3.81	3.01	3.41	2.79	2.51	2.40
01/09/07	6.66	6.22			4.30	3.66	3.79	3.04	3.50	2.72	3.41	2.66	2.51	2.43
01/10/07	5.72	5.33			4.14	3.74	3.48	3.07	3.18	2.68	2.78	2.56	2.51	2.44
01/11/07	4.78	3.87			3.05	2.42	2.37	1.85	2.23	1.65	2.46	1.87	2.51	2.40
01/12/07	2.74	1.66			2.26	1.50	1.57	0.98	1.59	0.89	1.99	1.27	2.35	2.19
01/13/07	1.62	0.99			2.57	1.30	1.41	0.66	1.11	0.46	1.52	0.73	2.03	1.92
01/14/07	2.26	1.58			3.21	2.28	1.89	1.09	1.11	0.51	1.52	0.79	2.35	2.11
01/15/07	2.26	1.57			2.73	1.76	1.25	0.58	0.63	0.21	1.36	0.50	2.03	1.74
01/16/07	1.78	1.27			2.42	1.66	1.09	0.41	0.31	0.04	1.04	0.24	1.55	1.29
01/17/07	2.10	1.26			2.42	1.60	1.09	0.40	0.31	0.03	0.88	0.17	1.71	1.56
01/18/07	2.42	1.73			3.05	1.97	1.41	0.71	0.79	0.23	1.36	0.41	1.87	1.66
01/19/07	3.21	2.56			3.52	2.52	2.05	1.23	1.27	0.59	1.83	0.70	1.71	1.52
01/20/07	4.00	3.12			3.83	2.75	2.53	1.46	1.76	0.77	1.83	0.88	2.35	2.02
01/21/07	3.84	3.21			3.83	2.77	2.53	1.49	1.92	0.85	2.31	1.03	2.19	2.09
01/22/07	4.47	3.55			4.30	3.27	3.32	2.00	2.55	1.30	2.62	1.40	2.03	1.76

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
01/23/07	4.78	3.91			4.30	3.30	3.16	2.00	2.39	1.30	2.46	1.33	2.03	1.74
01/24/07	4.47	3.75			4.30	3.25	3.16	2.00	2.55	1.32	2.78	1.39	1.87	1.66
01/25/07	4.47	3.70			4.46	3.46	3.48	2.20	2.71	1.50	2.78	1.50	2.03	1.64
01/26/07	4.78	3.83			4.46	3.46	3.48	2.23	2.71	1.49	2.78	1.49	2.03	1.80
01/27/07	4.63	3.80			4.62	3.40	3.48	2.23	2.87	1.50	2.94	1.53	2.03	1.91
01/28/07	4.47	3.62			4.46	3.29	3.16	1.96	2.55	1.34	2.78	1.41	1.87	1.65
01/29/07	4.31	3.48			4.30	3.16	3.16	1.99	2.55	1.26	2.62	1.29	2.03	1.84
01/30/07	5.41	4.42			4.77	3.86	3.94	2.84	3.18	2.00	3.26	1.95	2.51	2.19
01/31/07	5.10	4.34			4.62	3.59	3.79	2.61	3.18	1.84	3.09	1.83	2.35	2.15
02/01/07	4.63	3.99			4.42	3.48	3.32	2.35	2.71	1.59	2.94	1.63	2.51	2.14
02/02/07	4.00	3.23			3.80	2.88	2.85	1.73	2.07	1.02	2.62	1.16	2.51	2.19
02/03/07	3.68	3.02			4.11	2.88	3.16	1.86	2.39	1.13	2.78	1.33	2.35	2.04
02/04/07	6.04	4.72			6.29	4.67	5.20	3.70	4.43	2.86	4.19	2.66	2.67	2.29
02/05/07	6.82	5.94			6.45	5.30	5.67	4.33	4.74	3.47	4.51	3.21	2.35	2.17
02/06/07	7.44	6.58			6.76	5.71	5.98	4.70	5.05	3.78	4.66	3.42	2.51	2.09
02/07/07	6.82	6.40			6.14	5.45	5.20	4.30	4.27	3.31	3.57	3.01	1.87	1.75
02/08/07	8.37	7.21			7.07	6.01	6.29	4.95	5.36	3.95	4.82	3.45	2.19	1.89
02/09/07	8.99	8.20			7.53	6.62	6.91	5.57	5.67	4.55	5.13	3.99	2.03	1.86
02/10/07	8.53	7.89			7.23	6.29	6.29	5.17	5.52	4.26	5.13	3.69	2.19	1.85
02/11/07	8.68	8.28			7.38	6.71	6.91	5.69	5.98	4.73	4.98	4.09	2.19	1.91
02/12/07	8.68	8.16			7.23	6.51	6.29	5.33	5.52	4.36	4.82	3.63	2.64	2.12
02/13/07	8.53	7.61			6.61	5.87	5.98	4.57	5.21	3.67	4.82	3.34	2.64	2.20
02/14/07	8.53	7.53			6.45	5.71	5.98	4.53	5.21	3.59	4.66	3.20	2.96	2.28
02/15/07	8.53	8.08			6.61	6.22	5.67	5.06	4.89	4.04	3.88	3.54	2.33	2.28
02/16/07	9.46	8.74			7.69	6.77	7.22	5.75	6.14	4.74	5.76	4.10	2.96	2.40
02/17/07	10.39	9.31			8.00	7.03	7.69	6.01	6.76	5.05	6.07	4.36	2.96	2.39
02/18/07	9.46	8.54			7.69	6.64	6.44	5.21	5.05	4.26	4.35	3.84	2.35	2.26
02/19/07	8.22	7.40			6.45	5.71	5.51	4.31	4.89	3.42	4.51	2.96	2.82	2.49
02/20/07	8.06	7.55			6.92	6.19	6.44	5.14	5.52	4.25	5.13	3.88	2.82	2.55
02/21/07	7.59	7.23			6.92	6.22	5.67	4.97	4.74	4.06	4.19	3.68	2.82	2.54
02/22/07	7.91	7.13			6.45	5.99	5.51	4.69	4.58	3.74	4.04	3.33	2.82	2.58
02/23/07	7.91	7.46			6.29	5.91	5.20	4.45	4.27	3.44	3.57	3.07	2.67	2.54
02/24/07	6.97	5.93			5.67	4.85	4.10	3.27	3.33	2.40	3.09	2.22	2.67	2.45

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
02/25/07	6.35	5.72			5.82	5.18	5.04	3.99	3.96	3.10	3.73	2.82	2.67	2.42
02/26/07	6.82	6.12			6.29	5.57	5.98	4.51	5.05	3.61	4.66	3.29	2.82	2.52
02/27/07	7.59	6.62			6.29	5.78	5.98	4.79	5.21	3.88	4.82	3.55	2.98	2.53
02/28/07	7.28	6.72			6.29	5.64	5.20	4.33	4.27	3.35	3.88	3.05	2.67	2.46
03/01/07	6.35	6.01			5.82	5.19	4.73	3.85	3.65	2.90	3.26	2.71	2.82	2.60
03/02/07	7.28	6.34			5.98	5.16	5.51	4.08	4.74	3.23	4.66	3.07	3.14	2.81
03/03/07	7.75	7.04			6.76	5.92	6.60	5.16	5.83	4.29	5.60	4.07	2.98	2.67
03/04/07	9.14	7.90			8.00	6.87	8.16	6.27	7.38	5.37	6.68	4.82	3.14	2.79
03/05/07	9.77	8.61			8.15	7.33	8.16	6.49	7.58	5.54	6.68	4.88	3.14	2.78
03/06/07	11.17	9.79			9.08	8.00	9.08	7.20	8.35	6.19	7.46	5.37	3.30	2.90
03/07/07	11.79	10.87			9.74	8.83	9.39	7.74	8.46	6.75	7.76	6.03	3.46	3.05
03/08/07	11.95	10.91			10.52	9.15	9.70	8.20	8.77	7.17	7.92	6.26	3.62	3.16
03/09/07	11.02	10.39			9.27	8.32	8.16	7.17	6.92	6.03	5.76	5.26	3.30	3.10
03/10/07	11.95	10.53			10.52	8.64	9.39	7.53	8.77	6.48	8.07	5.62	3.62	3.28
03/11/07	13.04	11.75			11.61	9.71	10.94	8.71	10.00	7.69	8.84	6.80	3.93	3.42
03/12/07	13.51	12.42			11.92	10.49	11.56	9.49	10.62	8.46	9.46	7.52	4.09	3.60
03/13/07	13.82	12.83			12.07	10.97	11.41	9.80	10.31	8.59	8.53	7.36	4.09	3.68
03/14/07	13.51	12.66			11.76	10.39	10.94	9.18	9.69	8.01	8.22	6.88	4.09	3.71
03/15/07	12.57	11.50			10.68	8.80	9.39	7.51	8.46	6.45	7.76	5.66	4.25	3.66
03/16/07	12.73	11.31			11.61	9.54	10.94	8.48	9.84	7.43	8.99	6.59	4.41	3.83
03/17/07	13.82	11.96			12.54	10.38	11.87	9.31	11.08	8.22	9.61	7.18	4.57	4.01
03/18/07	14.60	13.05			13.01	11.01	12.34	9.87	11.23	8.76	9.92	7.66	4.57	4.07
03/19/07	14.76	13.29			12.85	11.03	12.49	9.93	11.70	8.85	10.23	7.78	4.72	4.23
03/20/07	14.28	12.95			12.23	10.33	11.10	8.91	9.22	7.69	8.07	6.81	4.25	4.25
03/21/07	12.42	10.64			10.37	8.70	9.39	7.44	8.46	6.43	8.53	5.91		
03/22/07	11.64	10.19			10.52	9.09	9.86	8.00	9.22	6.95	8.22	6.25		
03/23/07	13.82	11.70			12.54	10.46	12.18	9.47	11.39	8.44	10.39	7.59		
03/24/07	14.28	12.57			13.32	11.16	12.96	10.26	12.48	9.32	11.01	8.37		
03/25/07	13.82	13.09			12.69	11.53	12.03	10.36	10.47	9.27	9.31	8.37		
03/26/07	12.57	11.63			11.92	10.26	11.25	9.20	10.77	8.29	10.08	7.57		
03/27/07	11.95	10.88			11.14	9.93	10.63	8.90	9.38	7.90	7.76	7.33		
03/28/07	10.39	9.23			10.83	8.84	10.17	7.91	9.69	7.02	9.31	6.39	5.63	5.06
03/29/07	11.64	9.82			11.61	9.35	10.94	8.51	10.47	7.71	10.23	7.26	6.26	5.35

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
03/30/07	12.57	10.85			12.38	10.41	12.03	9.65	11.54	8.79	10.70	8.11	6.26	5.52
03/31/07	12.88	12.01			12.54	11.27	12.03	10.37	11.39	9.39	10.39	8.50	6.26	5.72
04/01/07	13.19	12.36			12.85	11.40	12.03	10.43	11.23	9.51	11.01	8.86	6.26	5.77
04/02/07	13.35	12.22			11.61	10.35	10.94	9.37	9.90	8.54	9.15	7.87	5.79	5.31
04/03/07	12.57	11.54			9.43	7.81	8.92	7.05	8.51	6.54	8.07	6.15	5.95	5.43
04/04/07	12.73	11.57			9.74	8.57	9.08	7.77	8.51	7.21	8.07	6.69	5.79	5.57
04/05/07	14.44	12.33			11.30	9.02	10.94	8.27	10.37	7.70	9.46	7.09	6.11	5.66
04/06/07	15.71	13.54			11.76	9.89	11.25	8.92	10.68	8.15	9.77	7.37	6.26	5.72
04/07/07	15.39	14.23			10.99	9.76	10.17	8.67	9.59	7.90	8.84	7.14	6.11	5.55
04/08/07	15.23	14.23			9.89	8.68	8.77	7.79	8.19	7.18	7.46	6.51	5.63	5.30
04/09/07	14.60	12.90			9.12	8.23	8.16	7.37	7.89	6.78	7.30	6.33	5.48	5.35
04/10/07	11.64	10.70			8.96	7.46	8.46	6.79	8.19	6.29	7.92	5.99	5.48	5.31
04/11/07	11.33	9.98			9.43	7.54	8.92	6.83	8.51	6.36	7.76	6.02	5.95	5.49
04/12/07	12.88	11.20			9.43	8.28	8.92	7.46	8.66	6.90	8.07	6.45	5.48	5.32
04/13/07	13.97	11.96			10.37	8.12	9.86	7.37	9.43	6.83	8.69	6.37	5.95	5.52
04/14/07	13.66	12.31			9.43	8.35	8.92	7.49	8.51	6.94	7.92	6.48	6.11	5.68
04/15/07	13.19	11.76			10.52	8.73	9.86	7.91	9.43	7.33	8.84	6.79	5.95	5.60
04/16/07	14.13	12.13			10.37	8.37	9.86	7.56	9.43	7.00	8.69	6.53	5.95	5.67
04/17/07	13.66	11.84			9.43	8.16	9.23	7.41	8.66	6.91	8.38	6.50	6.11	5.73
04/18/07	11.17	9.17			8.65	7.17	7.69	6.42	6.81	5.95	6.37	5.77	5.79	5.62
04/19/07	11.48	9.00			10.21	7.83	9.86	7.28	9.43	6.85	8.69	6.59	6.11	5.84
04/20/07	13.97	11.36			10.68	8.51	9.86	7.72	9.12	7.13	8.84	6.78	6.42	6.02
04/21/07	13.51	12.16			9.74	8.36	9.23	7.59	8.66	7.05	8.22	6.73	6.57	6.09
04/22/07	13.51	12.35			9.27	8.36	8.31	7.53	7.58	6.97	7.14	6.58	5.95	5.92
04/23/07	15.56	12.99			11.92	9.32	11.10	8.55	10.53	7.95	9.61	7.39	6.11	5.98
04/24/07	16.66	14.33			11.45	9.49	10.79	8.58	10.22	7.86	9.46	7.28	6.57	6.13
04/25/07	16.66	14.96			11.61	9.66	11.10	8.75	10.68	8.04	9.77	7.42	6.57	6.23
04/26/07	16.51	14.47			11.30	9.66	10.79	8.69	10.22	7.94	9.31	7.30	6.57	6.21
04/27/07	18.27	15.49			12.23	9.86	11.41	8.91	10.84	8.18	9.92	7.55	6.88	6.35
04/28/07	19.74	17.12			12.69	10.42	11.87	9.37	11.15	8.53	10.08	7.77	6.88	6.41
04/29/07	19.58	17.95			11.61	9.95	10.32	8.84	9.74	8.04	8.84	7.40	6.57	6.37
04/30/07	19.91	17.68			12.54	10.24	11.72	9.24	10.84	8.42	9.77	7.71	6.73	6.43
05/01/07	19.91	17.94			12.85	10.52	11.56	9.48	10.99	8.64	9.92	7.88	6.73	6.52

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
05/02/07	19.08	16.50			11.45	9.43	9.86	8.32	8.66	7.57	7.76	7.08	6.57	6.48
05/03/07	15.07	13.83			10.99	9.20	10.32	8.42	9.90	7.82	9.31	7.42	6.88	6.61
05/04/07	15.23	13.19			11.45	9.26	10.94	8.46	10.37	7.88	9.61	7.47	6.88	6.69
05/05/07	15.07	12.94			11.76	9.40	11.25	8.61	10.68	8.04	9.77	7.64	7.04	6.83
05/06/07	15.87	13.41			12.07	9.72	11.41	8.91	10.84	8.32	9.92	7.82	7.19	6.88
05/07/07	18.76	15.58			13.32	10.69	12.49	9.70	11.77	8.95	10.54	8.27	7.04	6.91
05/08/07	20.56	17.64			13.63	11.17	12.81	10.00	12.08	9.16	10.70	8.40	7.19	7.05
05/09/07	21.21	19.05			13.78	11.45	12.96	10.26	12.23	9.37	10.85	8.59	7.35	7.15
05/10/07	21.38	19.23			13.01	11.18	12.18	9.92	11.30	9.06	10.39	8.35	7.35	7.14
05/11/07	20.88	18.96			12.85	10.98	12.03	9.80	11.30	8.98	10.23	8.30	7.50	7.16
05/12/07	21.71	19.49			13.63	11.32	12.81	10.17	11.92	9.33	10.70	8.59	7.50	7.28
05/13/07	20.56	18.28			13.16	11.13	12.18	10.00	11.46	9.21	10.54	8.55	7.50	7.38
05/14/07	19.08	16.88			13.01	10.80	12.18	9.75	11.46	9.05	10.54	8.47	7.66	7.45
05/15/07	20.07	17.53			13.78	11.30	12.81	10.22	12.08	9.48	11.01	8.82	7.81	7.62
05/16/07	21.21	18.68			14.09	11.64	13.12	10.48	12.23	9.67	11.01	8.94	7.97	7.70
05/17/07	22.38	19.92			14.09	11.79	13.12	10.61	12.39	9.77	11.32	9.06	7.97	7.74
05/18/07	22.04	20.05			14.09	11.94	13.12	10.73	12.23	9.86	11.16	9.11	8.12	7.81
05/19/07	21.54	20.07			13.94	11.95	13.12	10.80	12.39	9.95	11.32	9.23	8.28	7.95
05/20/07	20.23	18.12			12.69	10.96	10.94	9.89	10.37	9.23	10.08	8.78	8.12	8.00
05/21/07	17.62	15.59			11.92	10.66	11.41	9.76	10.84	9.16	10.23	8.78	8.28	8.03
05/22/07	17.14	14.58			11.92	10.49	11.56	9.68	11.15	9.20	10.70	8.87	8.43	8.14
05/23/07	18.27	15.66			13.63	11.21	13.12	10.38	12.54	9.82	11.62	9.30	8.43	8.24
05/24/07	20.07	17.68			13.94	11.90	13.27	10.90	12.70	10.24	11.62	9.58	8.74	8.37
05/25/07	20.23	18.46			14.25	12.10	13.73	11.16	12.86	10.39	11.93	9.71	8.74	8.46
05/26/07	20.72	18.92			14.41	12.51	13.58	11.44	12.86	10.60	11.93	9.88	8.89	8.57
05/27/07	20.39	19.09			14.57	12.57	13.58	11.46	12.86	10.70	12.08	10.03	8.89	8.69
05/28/07	19.41	17.49			13.94	12.16	13.27	11.13	12.70	10.41	11.78	9.80	9.05	8.72
05/29/07	20.39	17.75			14.72	12.28	13.88	11.29	13.32	10.62	12.39	10.03	9.36	8.93
05/30/07	21.38	18.84			15.36	12.89	14.51	11.77	13.78	11.05	12.71	10.37	9.36	9.08
05/31/07	22.72	20.13			15.67	13.29	14.82	12.09	14.09	11.29	12.86	10.53	9.36	9.14
06/01/07	23.58	21.14			15.99	13.60	14.98	12.34	14.24	11.50	13.17	10.72	9.67	9.31
06/02/07	23.92	21.82			16.15	13.72	14.98	12.43	14.09	11.62	13.02	10.81	9.83	9.46
06/03/07	25.31	23.09			16.63	14.40	15.61	13.06	14.72	12.14	13.32	11.24	9.83	9.57

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
06/04/07	24.27	22.20			15.52	13.73	13.58	12.36	12.70	11.53	12.08	10.83	9.83	9.68
06/05/07	21.38	19.08			13.63	12.24	12.18	11.21	11.30	10.64	10.85	10.27	9.98	9.78
06/06/07	17.46	15.47			12.07	11.33	11.10	10.58	10.53	10.15	10.39	9.96	9.98	9.87
06/07/07	17.78	15.46			14.25	12.07	13.42	11.44	13.17	11.03	12.55	10.73	10.14	10.06
06/08/07	20.23	17.41			15.67	13.07	14.98	12.25	14.24	11.63	13.17	11.09	10.29	10.16
06/09/07	20.56	18.73			15.67	13.57	14.98	12.68	14.56	12.03	13.63	11.44	10.61	10.32
06/10/07	19.58	17.89			14.57	12.77	13.12	11.92	12.08	11.35	11.32	10.83	10.45	10.38
06/11/07	18.43	16.50			15.67	13.18	14.98	12.53	14.40	12.00	13.63	11.55	10.76	10.55
06/12/07	20.56	18.31			16.47	14.02	15.77	13.20	15.19	12.54	14.25	11.93	10.92	10.70
06/13/07	21.38	19.37			15.52	13.92	14.98	13.00	14.40	12.32	13.48	11.73	11.07	10.76
06/14/07	21.38	19.82			15.67	13.64	14.98	12.94	14.40	12.37	13.63	11.85	11.07	10.90
06/15/07	21.38	19.56			16.15	13.79	15.61	13.13	15.03	12.57	14.09	12.07	11.22	11.06
06/16/07	21.54	19.88			16.47	14.14	15.77	13.43	15.19	12.85	14.25	12.32	11.38	11.19
06/17/07	19.91	18.45			15.52	13.59	14.98	12.96	14.56	12.46	13.79	12.04	11.53	11.25
06/18/07	20.39	18.50			15.99	13.73	15.46	13.13	15.03	12.66	14.25	12.26	11.69	11.42
06/19/07	21.38	19.17			16.63	14.19	16.09	13.53	15.51	13.01	14.56	12.53	11.84	11.54
06/20/07	21.54	20.08			16.47	14.39	15.77	13.69	15.19	13.15	14.41	12.64	11.84	11.62
06/21/07	23.23	20.81			17.11	14.63	16.41	13.92	15.83	13.35	14.72	12.81	12.00	11.72
06/22/07	23.58	21.58			17.11	14.81	16.41	14.06	15.83	13.46	14.87	12.91	12.00	11.84
06/23/07	22.55	20.88			16.79	14.74	16.24	14.04	15.67	13.47	14.72	12.95	12.16	11.92
06/24/07	21.54	19.88			16.63	14.46	15.93	13.79	15.51	13.30	14.72	12.87	12.16	12.01
06/25/07	20.39	18.81			15.99	14.18	15.61	13.57	15.19	13.13	14.41	12.78	12.31	12.08
06/26/07	20.88	18.72			16.79	14.36	16.24	13.81	15.83	13.38	15.03	12.99	12.47	12.17
06/27/07	22.04	19.82			17.27	14.92	16.57	14.26	15.99	13.74	15.19	13.25	12.47	12.28
06/28/07	23.41	21.28			17.43	15.21	16.72	14.48	16.14	13.94	15.35	13.41	12.62	12.35
06/29/07	23.92	21.96			17.27	15.28	16.72	14.55	16.14	13.98	15.19	13.44	12.62	12.43
06/30/07	22.89	21.20			17.27	15.19	16.72	14.52	16.14	13.98	15.35	13.49	12.62	12.49
07/01/07	23.41	21.21			17.58	15.19	16.88	14.53	16.31	14.01	15.51	13.53	12.78	12.59
07/02/07	22.55	21.07			16.79	15.07	16.24	14.38	15.67	13.88	14.87	13.46	12.78	12.64
07/03/07	23.41	21.18			17.74	15.38	17.04	14.72	16.62	14.21	15.67	13.71	12.93	12.71
07/04/07	24.44	22.16			18.07	15.68	17.36	14.98	16.78	14.43	15.98	13.90	13.09	12.83
07/05/07	24.96	22.82			18.23	15.86	17.52	15.12	16.94	14.54	15.98	13.98	13.09	12.89
07/06/07	24.27	22.86			17.58	15.76	17.04	15.02	16.62	14.45	15.98	13.92	13.09	12.94

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
07/07/07	24.44	22.63			17.91	15.87	17.21	15.17	16.78	14.62	15.98	14.09	13.24	13.02
07/08/07	24.27	22.51			17.91	15.90	17.36	15.19	16.78	14.63	15.98	14.13	13.24	13.10
07/09/07	24.27	22.39			18.23	15.95	17.52	15.26	16.94	14.73	16.14	14.24	13.40	13.21
07/10/07	24.44	22.55			18.23	16.09	17.68	15.37	17.10	14.83	16.29	14.31	13.40	13.27
07/11/07	24.78	23.00			18.17	16.13	17.52	15.37	17.10	14.83	16.14	14.35	13.56	13.39
07/12/07	23.92	22.65			17.20	15.84	16.57	15.10	16.14	14.62	15.67	14.23	13.56	13.43
07/13/07	23.92	22.55			17.68	16.18	17.21	15.43	16.78	14.89	16.14	14.41	13.71	13.50
07/14/07	24.92	22.85			18.98	16.50	18.17	15.78	17.74	15.26	16.77	14.74	13.71	13.60
07/15/07	24.94	23.23			18.33	16.48	17.68	15.69	17.10	15.16	16.46	14.65	13.86	13.70
07/16/07	23.98	22.69			17.84	16.27	16.88	15.49	16.31	14.96	15.82	14.54	13.86	13.77
07/17/07	23.93	22.32			18.66	16.72	18.01	16.02	17.58	15.45	16.77	14.93	14.02	13.86
07/18/07	24.44	22.73			18.82	16.67	18.01	15.97	17.58	15.47	16.77	14.99	14.17	13.95
07/19/07	23.64	22.14			18.66	16.60	18.01	15.89	17.42	15.40	16.61	14.96	14.33	14.06
07/20/07	23.30	21.62			18.66	16.51	18.01	15.85	17.58	15.39	16.77	14.98	14.33	14.14
07/21/07	23.35	21.70			17.68	16.22	17.04	15.61	16.62	15.19	16.14	14.86	14.33	14.15
07/22/07	24.17	22.18			19.14	16.85	18.49	16.21	18.06	15.74	17.24	15.29	14.48	14.30
07/23/07	23.35	21.99			17.68	16.39	16.88	15.77	16.46	15.31	16.14	14.96	14.48	14.34
07/24/07	22.54	21.05			17.52	16.48	17.04	15.89	16.62	15.48	16.29	15.17	14.64	14.46
07/25/07	22.94	21.59			18.17	16.83	17.68	16.12	17.42	15.70	16.93	15.32	14.80	14.60
07/26/07	23.45	21.62			19.46	17.23	18.81	16.54	18.38	16.10	17.56	15.68	14.80	14.64
07/27/07	24.97	22.91			19.78	17.65	19.13	16.93	18.71	16.40	17.88	15.83	14.96	14.76
07/28/07	24.82	23.24			19.78	17.60	19.13	16.88	18.71	16.36	17.88	15.87	14.96	14.84
07/29/07	24.12	22.85			19.14	17.36	18.49	16.64	17.90	16.16	17.40	15.77	15.12	14.91
07/30/07	23.18	21.97			18.98	17.40	18.33	16.70	17.90	16.24	17.24	15.84	15.28	15.01
07/31/07	23.26	21.54			19.62	17.60	18.97	16.93	18.55	16.45	17.88	16.03	15.28	15.10
08/01/07	23.67	21.79			19.78	17.61	19.13	16.91	18.71	16.42	17.88	16.02	15.44	15.18
08/02/07	22.80	21.69			18.49	16.96	17.21	16.23	16.62	15.79	16.14	15.53	15.44	15.22
08/03/07	23.69	21.55			20.18	17.79	19.62	17.21	19.20	16.78	18.36	16.37	15.44	15.36
08/04/07	24.24	22.26			20.02	18.13	19.46	17.37	19.04	16.86	18.36	16.40	15.59	15.47
08/05/07	23.09	21.21			18.88	17.46	18.33	16.78	17.90	16.35	17.56	16.02	15.76	15.51
08/06/07	21.99	20.41			19.37	17.44	18.97	16.89	18.38	16.54	18.20	16.25	15.76	15.59
08/07/07	22.56	20.70			19.69	17.72	19.29	17.13	19.04	16.76	18.52	16.45	15.91	15.74
08/08/07	22.87	20.96			19.86	17.76	19.46	17.20	19.04	16.84	18.52	16.55	16.07	15.87

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
08/09/07	23.33	21.37			20.18	18.08	19.62	17.46	19.20	17.07	18.52	16.71	16.23	15.94
08/10/07	23.04	21.48			19.86	18.22	19.46	17.61	19.20	17.20	18.52	16.84	16.23	16.06
08/11/07	22.71	20.96			20.35	18.13	19.94	17.58	19.69	17.23	19.01	16.93	16.39	16.17
08/12/07	23.23	21.18			20.51	18.50	19.94	17.85	19.69	17.45	19.17	17.06	16.54	16.26
08/13/07	23.18	21.30	21.94	21.02	20.51	18.45	20.11	17.85	19.85	17.46	19.17	17.13	16.54	16.36
08/14/07	22.97	21.06	21.01	19.55	19.86	18.29	19.46	17.60	19.20	17.21	18.68	16.95	16.71	16.45
08/15/07	22.51	20.85	21.13	19.46	19.69	18.19	19.46	17.62	19.20	17.31	18.84	17.08	16.86	16.57
08/16/07	22.97	21.29	21.51	19.98	20.67	19.01	20.43	18.40	20.01	17.98	19.49	17.56	16.86	16.65
08/17/07	22.90	21.24	22.08	20.28	20.67	18.93	20.27	18.29	19.85	17.88	19.33	17.51	16.86	16.73
08/18/07	22.85	21.14	21.80	20.08	20.84	18.73	20.43	18.16	20.17	17.81	19.66	17.52	17.02	16.82
08/19/07	21.80	19.37	20.67	18.59	19.69	17.75	18.65	17.09	18.06	16.82	17.56	16.76	16.86	16.81
08/20/07	19.39	18.25	19.53	17.99	20.02	18.04	19.78	17.68	19.53	17.49	19.33	17.41	17.18	16.94
08/21/07	21.63	19.52	21.08	19.16	20.67	18.86	20.43	18.38	20.17	18.05	19.49	17.76	17.18	16.96
08/22/07	21.87	20.24	21.08	19.53	20.35	18.68	20.11	18.15	19.85	17.83	19.49	17.60	17.18	16.97
08/23/07	21.92	20.20	20.89	19.28	20.35	18.61	20.11	18.09	20.01	17.80	19.49	17.59	17.18	16.99
08/24/07	21.94	20.16	21.03	19.28	20.67	18.70	20.43	18.20	20.17	17.89	19.82	17.67	17.18	16.99
08/25/07	22.32	20.40	21.46	19.63	20.84	18.97	20.59	18.40	20.33	18.05	19.82	17.73	17.34	17.03
08/26/07	22.47	20.75	21.53	20.00	20.67	19.02	20.43	18.44	20.17	18.08	19.66	17.77	17.34	17.08
08/27/07	21.49	20.09	20.75	19.35	20.18	18.66	19.94	18.14	19.85	17.83	19.49	17.62	17.34	17.09
08/28/07	21.27	19.66	20.56	18.99	20.35	18.52	20.11	18.04	20.01	17.78	19.49	17.59	17.34	17.09
08/29/07	21.72	19.83	20.89	19.11	20.67	18.74	20.43	18.25	20.33	17.99	19.82	17.76	17.34	17.10
08/30/07	22.99	20.76	21.46	19.91	20.51	19.15	20.11	18.52	19.85	18.11	19.33	17.76	17.34	17.08
08/31/07	22.80	21.74	22.23	20.96	20.67	19.56	20.43	18.93	20.17	18.47	19.82	18.03	17.34	17.09
09/01/07	23.38	21.63	22.49	20.86	21.50	19.50	21.09	18.92	20.66	18.51	20.31	18.20	17.34	17.12
09/02/07	23.55	21.96	22.75	21.20	21.17	19.76	20.76	19.08	20.49	18.62	19.98	18.16	17.34	17.07
09/03/07	23.09	21.54	22.32	20.79	21.01	19.35	20.59	18.71	20.33	18.29	19.98	17.93	17.34	17.00
09/04/07	22.59	21.21	21.96	20.63	20.35	19.24	19.78	18.55	19.53	18.11	19.33	17.76	17.18	16.96
09/05/07	20.63	19.21	19.98	18.18	19.04	17.57	18.33	17.06	17.74	16.88	17.40	16.80	17.02	16.90
09/06/07	20.27	18.45	19.72	17.74	20.02	18.20	19.78	17.80	19.78	17.80	19.49	17.52	17.34	16.98
09/07/07	20.84	18.99	20.41	18.64	20.18	18.53	19.94	18.04	19.94	18.04	19.49	17.59	17.34	17.00
09/08/07	19.70	18.38	19.29	17.95	19.37	17.99	18.81	17.49	18.81	17.49	18.84	17.17	17.18	16.96
09/09/07	18.99	17.60	18.60	17.23	18.72	17.48	18.65	17.07	18.65	17.07	18.68	16.98	17.18	16.96
09/10/07	18.82	17.23	18.58	16.96	19.21	17.58	18.97	17.22	18.97	17.22	19.17	17.18	17.50	17.13

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
09/11/07	19.15	17.42	19.01	17.27	19.53	18.08	19.46	17.70	19.46	17.70	19.33	17.44	17.50	17.16
09/12/07	19.41	17.75	19.32	17.61	19.69	18.21	19.62	17.80	19.62	17.80	19.49	17.54	17.50	17.25
09/13/07	19.96	18.34	19.53	18.03	19.86	18.46	19.62	18.02	19.62	18.02	19.49	17.65	17.50	17.23
09/14/07	20.25	18.90	19.13	18.32	19.69	18.70	19.46	18.25	19.46	18.25	19.33	17.79	17.34	17.17
09/15/07	20.25	18.70	19.70	18.25	19.69	18.49	19.29	18.01	19.29	18.01	19.17	17.59	17.34	17.15
09/16/07	19.58	18.19	19.08	17.79	19.37	18.13	19.13	17.65	19.13	17.65	19.01	17.36	17.50	17.20
09/17/07	18.75	17.57	18.65	17.43	18.55	17.67	18.17	17.22	18.17	17.22	18.52	17.10	17.34	17.09
09/18/07	17.70	16.28	17.65	15.94	17.74	16.46	17.36	16.04	17.36	16.04	16.93	16.21	17.18	17.04
09/19/07	16.73	15.52	16.99	15.62	17.91	16.66	17.84	16.45	17.84	16.45	18.36	16.72	17.18	16.94
09/20/07	17.37	15.82	17.42	15.86	18.39	17.12	18.33	16.88	18.33	16.88	18.68	16.96	17.18	16.93
09/21/07	17.94	16.38	17.84	16.33	18.72	17.34	18.65	17.06	18.65	17.06	18.84	17.08		
09/22/07	17.15	15.89	17.13	15.92	18.07	17.09	17.68	16.71	17.68	16.71	17.56	16.64		
09/23/07	15.75	15.26	15.80	15.26	16.94	16.32	16.57	15.98	16.57	15.98	16.77	16.13		
09/24/07	16.20	14.94	16.32	14.96	17.27	15.94	17.21	15.72	17.21	15.72	17.88	16.11		
09/25/07	16.37	14.95	16.42	14.91	17.43	16.18	17.36	15.93	17.36	15.93	17.88	16.13		
09/26/07	16.61	15.15	16.63	15.12	17.58	16.31	17.52	16.05	17.52	16.05	17.88	16.15		
09/27/07	16.94	15.47	16.96	15.40	18.07	16.61	17.84	16.31	17.84	16.31	17.88	16.30		
09/28/07	16.37	15.36	16.32	15.46	17.58	16.38	17.04	15.96	17.04	15.96	16.93	15.79		
09/29/07	14.58	13.69	14.55	13.21	15.67	14.76	15.29	14.41	15.29	14.41	15.67	14.71		
09/30/07	13.83	12.92	14.07	12.76	15.67	14.48	15.46	14.23	15.46	14.23	15.67	14.54		
10/01/07	14.51	13.47	14.70	13.75	15.36	14.79	15.14	14.53	15.12	14.50	15.67	14.78		
10/02/07	14.65	13.62	14.79	13.61	15.99	14.79	15.93	14.69	15.74	14.58	15.98	14.87		
10/03/07	14.53	14.05	14.82	14.24	15.67	15.12	15.46	14.89	15.27	14.68	15.67	14.94		
10/04/07	14.84	13.72	14.77	13.81	15.19	14.58	15.14	14.43	14.80	14.27	15.19	14.57		
10/05/07	13.88	12.97	13.93	12.86	14.72	13.93	14.51	13.79	14.18	13.55	14.72	13.96		
10/06/07	12.92	11.84	12.92	11.85	14.41	13.18	13.88	12.82	13.56	12.42	14.72	13.03		
10/07/07	14.46	12.85	14.39	12.83	15.67	13.80	15.14	13.49	15.12	13.18	15.57	13.69		
10/08/07	15.25	14.00	15.39	13.99	16.47	15.01	16.09	14.63	15.74	14.28	16.36	14.43		
10/09/07	15.84	14.52	15.94	14.57	16.79	15.37	16.24	14.91	15.91	14.41	16.52	14.42		
10/10/07	15.32	14.11	15.32	14.23	15.99	14.95	15.77	14.32	14.96	13.63	14.31	13.68		
10/11/07	13.33	12.61	13.83	12.87	14.88	13.68	14.35	13.10	13.87	12.60	14.31	12.87		
10/12/07	13.50	12.96	13.35	12.89	14.41	13.81	13.88	13.20	13.26	12.62	13.54	12.93		
10/13/07	14.60	13.35	14.70	13.39	15.67	14.20	15.14	13.78	14.64	13.32	15.57	13.60		

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
10/14/07	14.79	13.58	14.89	13.57	15.99	14.53	15.46	14.06	15.12	13.59	15.89	13.83		
10/15/07	14.07	13.11	15.03	13.80	15.83	14.72	15.29	14.19	14.96	13.63	14.93	13.70		
10/16/07			14.98	14.17	15.52	14.57	14.66	13.96	14.18	13.40	14.46	13.50		
10/17/07			14.24	13.37	14.41	13.71	13.88	13.16	13.26	12.64	13.38	12.74		
10/18/07			12.58	11.14	13.16	11.83	12.18	11.06	11.54	10.36	11.37	10.65		
10/19/07			12.17	11.49	12.85	12.25	12.18	11.60	11.70	10.99	11.84	11.19		
10/20/07			12.22	11.65	13.16	12.24	12.49	11.67	11.70	11.07	12.30	11.39		
10/21/07			12.58	11.48	13.32	12.00	12.65	11.44	12.17	10.94	13.08	11.39		
10/22/07			12.87	11.73	13.63	12.43	13.27	11.96	12.79	11.48	11.37	11.22		
10/23/07			13.26	12.01	14.09	12.81	13.73	12.29	13.41	11.76				
10/24/07			14.00	12.74	14.57	13.37	14.19	12.86	13.71	12.27				
10/25/07			13.40	12.59	14.09	13.14	13.42	12.52	12.94	11.90				
10/26/07			12.17	11.07	12.85	12.03	12.18	11.30	11.39	10.69				
10/27/07			11.71	10.69	13.16	11.84	12.03	10.84	11.54	10.30				
10/28/07			11.66	10.65	13.16	11.99	12.34	11.10	11.86	10.60				
10/29/07			12.05	10.88	13.63	12.70	12.81	11.82	12.48	11.30				
10/30/07					14.09	13.35	13.42	12.54	12.94	11.95				
10/31/07					13.01	12.01	12.03	10.96	11.39	10.38				
11/01/07					12.38	11.53	11.56	10.47	11.23	9.93				
11/02/07					12.07	11.15	11.10	10.02	10.62	9.48				
11/03/07					12.23	10.95	11.10	9.85	10.62	9.32				
11/04/07					12.07	10.90	10.94	9.75	10.47	9.22				
11/05/07					12.07	10.94	10.94	9.74	10.47	9.20				
11/06/07					11.76	10.91	10.94	9.86	10.47	9.32				
11/07/07					11.61	10.82	11.10	9.87	10.47	9.26				
11/08/07					11.76	10.93	11.25	10.09	10.62	9.39				
11/09/07					11.61	10.88	10.79	9.91	9.84	9.12				
11/10/07					11.45	10.79	10.48	9.84	9.69	9.10				
11/11/07					12.07	11.13	10.94	10.17	10.16	9.41				
11/12/07					10.83	9.63	9.54	8.51	8.46	7.67				
11/13/07					10.68	9.96	9.86	8.99	9.07	8.22				
11/14/07					9.74	8.83	8.77	7.83	7.84	7.10				
11/15/07					9.89	8.90	8.92	7.87	7.99	7.07				

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
11/16/07					10.68	9.93	9.86	9.08	9.07	8.41				
11/17/07					11.92	11.01	11.25	10.27	10.47	9.57				
11/18/07					12.69	11.97	11.87	11.17	10.93	10.34				
11/19/07					12.38	11.18	11.25	10.10	10.16	9.13				
11/20/07					10.21	9.10	8.77	7.96	7.69	7.08				
11/21/07					8.65	7.75	7.38	6.46	6.29	5.57				
11/22/07					8.50	7.24	7.07	6.06	6.14	5.35				
11/23/07					7.57	6.60	6.44	5.51	5.67	4.82				
11/24/07					7.88	6.68	6.76	5.58	5.98	4.95				
11/25/07					8.50	7.47	7.38	6.44	6.61	5.75				
11/26/07					7.88	7.02	6.60	5.86	5.83	5.13				
11/27/07					8.19	7.43	7.22	6.40	6.29	5.62				
11/28/07					7.72	7.03	6.60	5.95	5.83	5.22				
11/29/07					8.03	7.35	6.91	6.13	5.98	5.27				
11/30/07					7.57	6.54	6.13	5.31	5.36	4.59				
12/01/07					7.10	6.04	5.51	4.71	4.74	3.97				
12/02/07					7.10	6.12	5.51	4.83	4.58	4.02				
12/03/07					8.50	7.38	7.22	6.25	6.29	5.45				
12/04/07					9.74	8.85	8.77	7.92	7.84	7.13				
12/05/07					9.27	8.62	8.00	7.49	7.23	6.66				
12/06/07					8.96	8.47	7.84	7.18	6.92	6.31				
12/07/07					8.96	8.32	7.53	7.03	6.45	6.20				
12/08/07					8.50	7.47	6.76	6.06	5.83	5.24				
12/09/07					6.94	6.03	5.51	4.51	4.43	3.73				
12/10/07					6.63	5.82	4.88	4.31	3.96	3.51				
12/11/07					5.69	4.72	3.79	3.07	2.71	2.26				
12/12/07					5.54	4.77	4.26	3.32	3.49	2.62				
12/13/07					6.17	5.31	4.73	3.92	3.96	3.25				
12/14/07					6.01	5.02	4.42	3.45	3.65	2.78				
12/15/07					6.48	5.40	4.57	3.90	3.65	3.13				
12/16/07					7.26	5.97	5.67	4.67	4.74	3.98				
12/17/07					7.41	6.54	6.13	5.26	5.21	4.48				
12/18/07					7.41	6.59	5.67	5.30	4.74	4.47				

Date	BR at Parma		BR at Middleton		BR at Eagle		Br at Glenwood		BR at Veterans Parkway		BR at Marden Bridge		BR at Lucky Peak	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
12/19/07					7.10	6.63	5.67	5.30	4.89	4.47				
12/20/07					7.41	6.62	5.82	5.35	5.05	4.56				
12/21/07					6.48	5.52	4.73	3.94	3.65	3.08				
12/22/07					5.69	4.58	3.63	2.94	2.71	2.14				
12/23/07					6.01	5.01	4.10	3.44	3.18	2.64				
12/24/07					6.79	5.70	5.36	4.50	4.43	3.80				
12/25/07					5.69	4.76	4.26	3.37	3.49	2.66				
12/26/07					5.69	4.69	3.79	3.13	2.86	2.35				
12/27/07					5.54	4.56	3.63	3.04	2.86	2.27				
12/28/07					5.07	4.29	3.48	2.73	2.39	1.90				
12/29/07					6.17	4.94	4.57	3.53	3.65	2.72				
12/30/07					6.48	5.33	4.88	4.03	3.96	3.25				
12/31/07					5.54	4.42	3.63	2.92	2.71	2.17				
01/01/08					4.60	3.44	2.69	1.84	1.76	1.09				
01/02/08					4.44	3.41	2.69	1.71	1.60	0.89				
01/03/08					4.60	3.49	2.69	1.94	1.60	1.13				

BR = Boise River

Table C-10. Geomean Bacteria Data from Lower Boise River, 2003-2008, provided by the City of Boise.

	AU 011a_06			AU 011a_06			AU 011a_06			AU 011a_06			AU 005_06	
	Boise River at Eckert Road			Boise River at Marden Bridge			Boise River at Veterans Parkway			Boise River at Glenwood			Boise River at Eagle	
Date	*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean
3/27/2003	4.7	**4**		15.3	**7.3**		34.3	**22.3**		28.0	**29.6**		59.0	**30.5**
4/3/2003	3.3	**3.4**		10.3	**6.4**		25.7	**24.0**		37.0	**32.5**		36.7	**25.9**
4/10/2003	3.7	**3.3**		4.0	**7.1**		14.0	**23.6**		30.0	**32.4**		24.7	**23.3**
4/17/2003	1.3	**3.1**		9.0	**7.7**		15.3	**27.8**		25.3	**32.3**		22.7	**22.6**
4/24/2003	7.3	**4.4**		3.7	**8.6**		29.0	**33.4**		29.0	**33.4**		22.0	**22.8**
5/1/2003	4.0	**4.8**		7.7	**11.3**		49.7	**34.7**		44.7	**36.2**		26.0	**25.3**
5/8/2003	2.7	**4.3**		17.3	**12.6**		23.7	**29.9**		36.3	**36.2**		21.3	**27.3**
5/15/2003	2.7	**5.0**		6.3	**11.4**		32.0	**29.8**		29.7	**36.4**		21.3	**30.7**
5/22/2003	7.7	**11.0**		15.0	**28.7**		38.0	**47.7**		29.7	**46.2**		23.7	**39.8**
5/29/2003	12.0	**9.3**		14.3	**23.9**		35.3	**42.7**		43.3	**42.6**		37.0	**42.7**
6/5/2003	2.3	**7.2**		13.7	**21.8**		23.3	**37.0**		45.0	**36.5**		38.0	**41.4**
6/12/2003	5.7	**6.1**		10.3	**19.4**		23.3	**41.1**		37.3	**34.6**		38.7	**39.4**
6/19/2003	129.7	**4.7**		643.3	**19.3**		339.0	**42.4**		97.7	**32.7**		78.0	**37.2**
6/26/2003	3.3	**2.2**		6.0	**8.3**		21.7	**24.9**		19.7	**26.1**		33.3	**32.2**
7/3/2003	3.3	**2.4**		9.0	**8.5**		17.3	**24.0**		20.0	**30.3**		32.0	**32.7**
7/10/2003	1.0	**2.0**		7.7	**8.1**		39.7	**25.8**		34.7	**36.0**		29.7	**32.1**
7/17/2003	1.7	**2.5**		10.0	**7.3**		27.0	**22.9**		28.0	**39.7**		29.0	**32.3**
7/24/2003	2.7	**3.2**		9.3	**8.6**		23.7	**22.7**		32.0	**45.2**		38.0	**34.6**
7/31/2003	5.7	**3.6**		7.0	**8.5**		18.0	**22.5**		41.3	**47.1**		36.0	**37.1**
8/7/2003	1.3	**4.0**		7.0	**9.6**		25.0	**27.6**		47.0	**53.4**		29.0	**41.2**
8/14/2003	2.7	**6.0**		4.7	**11.4**		22.0	**32.2**		56.7	**54.5**		30.7	**48.4**
8/21/2003	6.7	**6.7**		22.0	**15.6**		25.7	**37.3**		53.7	**54.8**		41.0	**52.2**
8/28/2003	4.7	**6.2**		8.7	**15.5**		22.7	**41.9**		39.3	**48.1**		53.7	**55.6**
9/4/2003	9.3	**6.4**		13.0	**17.2**		49.7	**48.6**		77.0	**49.2**		61.0	**56.9**
9/11/2003	10.3	**6.2**		17.0	**16.6**		54.7	**54.0**		52.0	**52.3**		64.7	**58.4**
9/18/2003	4.7	**6.5**		22.0	**14.2**		46.0	**53.3**		58.3	**52.5**		44.7	**57.1**

	AU 011a_06			AU 011a_06			AU 011a_06			AU 011a_06			AU 005_06	
	Boise River at Eckert Road			Boise River at Marden Bridge			Boise River at Veterans Parkway			Boise River at Glenwood			Boise River at Eagle	
Date	*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean
9/25/2003	4.3	**7.3**		21.3	**13.1**		45.7	**63.2**		28.0	**57.1**		56.3	**66.9**
10/2/2003	5.7	**8.4**		14.7	**11.7**		47.7	**74.3**		44.0	**69.2**		60.3	**67.0**
10/9/2003	7.7	**9.2**		10.7	**11.8**		84.0	**116.8**		105.0	**94.3**		69.0	**72.0**
10/16/2003	13.0	**8.8**		8.0	**11.8**		51.0	**120.1**		53.0	**89.7**		58.0	**67.2**
10/23/2003	8.3	**7.4**		14.3	**12.1**		108.0	**114.0**		88.7	**79.5**		98.7	**62.8**
10/30/2003	8.7	**8.3**		12.3	**13.0**		102.7	**117.7**		73.0	**76.6**		56.7	**50.0**
11/6/2003	9.3	**6.7**		15.0	**11.0**		456.7	**89.4**		206.7	**50.7**		86.3	**41.4**
11/13/2003	6.0	**6.4**		10.7	**7.8**		96.7	**47.7**		82.0	**33.2**		49.0	**34.2**
11/20/2003	5.7	**5.4**		9.3	**6.0**		39.3	**35.0**		29.0	**24.8**		41.3	**31.4**
11/24/2003	14.0	**4.5**		20.0	**5.0**		126.7	**30.7**		73.3	**24.9**		31.7	**30.2**
12/4/2003	3.0	**3.6**		5.3	**4.2**		26.0	**22.9**		9.3	**21.1**		22.0	**34.1**
12/11/2003	7.3	**4.6**		2.7	**6.8**		19.7	**26.2**		24.7	**29.8**		33.3	**40.5**
12/16/2003	2.7	**4.0**		3.0	**9.9**		20.7	**29.4**		19.0	**35.0**		32.0	**49.5**
12/22/2003	2.3	**5.2**		3.7	**13.0**		20.3	**34.8**		29.7	**41.3**		33.7	**50.7**
12/29/2003	4.7	**6.8**		8.7	**21.6**		29.3	**46.8**		32.0	**48.1**		58.7	**62.9**
1/8/2004	10.0	**6.1**		58.3	**20.1**		51.0	**47.5**		53.0	**48.7**		51.7	**52.0**
1/15/2004	3.7	**6.1**		17.0	**13.9**		35.0	**46.5**		54.7	**41.1**		91.3	**36.1**
1/22/2004	9.3	**6.8**		12.0	**10.9**		47.7	**42.1**		43.7	**36.6**		36.0	**28.8**
1/29/2004	9.3	**4.8**		45.7	**8.6**		90.3	**37.8**		63.3	**35.6**		98.7	**30.7**
2/5/2004	2.7	**3.8**		6.0	**5.7**		31.3	**30.4**		34.3	**28.4**		22.7	**27.3**
2/12/2004	10.0	**4.8**		9.3	**6.4**		46.0	**27.3**		22.7	**23.7**		8.3	**29.2**
2/19/2004	6.3	**4.0**		5.0	**6.6**		21.3	**24.7**		30.7	**23.9**		29.7	**36.3**
2/26/2004	1.7	**4.0**		3.7	**8.5**		27.7	**26.1**		38.0	**23.2**		49.7	**35.9**
3/4/2004	2.7	**5.3**		5.7	**11.5**		30.7	**32.2**		20.3	**25.9**		54.7	**30.2**
3/11/2004	9.3	**5.0**		11.0	**12.3**		18.3	**30.7**		14.0	**24.0**		31.7	**24.2**
3/18/2004	4.0	**4.0**		11.0	**11.5**		27.7	**31.2**		23.7	**26.9**		24.7	**26.8**
3/29/2004	6.0	**3.5**		18.0	**9.8**		28.0	**28.3**		26.0	**28.3**		28.0	**29.4**
4/5/2004	7.0	**3.5**		16.0	**9.1**		80.0	**27.0**		66.0	**31.9**		21.0	**30.4**

	AU 011a_06			AU 011a_06			AU 011a_06			AU 011a_06			AU 005_06	
	Boise River at Eckert Road			Boise River at Marden Bridge			Boise River at Veterans Parkway			Boise River at Glenwood			Boise River at Eagle	
Date	*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean
4/13/2004	2.0	**5.0**		8.0	**12.5**		24.0	**31.0**		14.0	**31.3**		18.0	**35.5**
4/19/2004	3.0	**5.0**		8.0	**13.1**		20.0	**33.5**		25.0	**33.7**		53.0	**37.3**
4/26/2004	2.0	**5.6**		5.0	**12.7**		17.0	**27.9**		30.0	**37.3**		39.0	**30.1**
5/3/2004	6.0	**6.7**		12.0	**14.9**		22.0	**34.7**		48.0	**37.1**		33.0	**26.8**
5/11/2004	45.0	**6.9**		80.0	**14.9**		160.0	**35.0**		60.0	**35.2**		46.0	**25.6**
5/17/2004	2.0	**4.8**		10.0	**9.6**		35.0	**25.0**		20.0	**33.7**		23.0	**23.5**
5/24/2004	5.0	**5.2**		7.0	**8.7**		8.0	**25.5**		42.0	**39.2**		18.0	**24.7**
6/1/2004	5.0	**5.4**		11.0	**9.5**		51.0	**34.4**		29.0	**50.9**		22.0	**31.9**
6/8/2004	7.0	**4.8**		12.0	**9.5**		23.0	**28.8**		37.0	**51.2**		26.0	**34.4**
6/14/2004	7.0	**8.4**		9.0	**8.3**		30.0	**28.3**		48.0	**50.9**		30.0	**37.6**
6/21/2004	3.0	**7.5**		6.0	**8.8**		38.0	**28.3**		43.0	**56.7**		30.0	**42.8**
6/28/2004	6.0	**8.6**		11.0	**9.5**		36.0	**25.1**		154.0	**54.1**		64.0	**41.6**
7/6/2004	3.0	**8.6**		11.0	**9.5**		21.0	**20.8**		30.0	**36.7**		32.0	**39.3**
7/12/2004	110.0	**8.6**		6.0	**9.5**		21.0	**20.6**		36.0	**37.8**		41.0	**37.7**
7/19/2004	4.0	**5.5**		12.0	**10.3**		30.0	**21.0**		82.0	**38.6**		57.0	**36.7**
7/26/2004	6.0	**9.2**		9.0	**14.1**		21.0	**26.7**		34.0	**43.0**		26.0	**44.3**
8/2/2004	6.0	**15.5**		11.0	**15.1**		14.0	**32.6**		22.0	**49.9**		48.0	**51.8**
8/10/2004	3.0	**23.4**		11.0	**14.2**		20.0	**39.8**		35.0	**52.4**		26.0	**50.2**
8/16/2004	12.0	**38.5**		9.0	**16.0**		23.0	**41.6**		40.0	**49.0**		36.0	**51.7**
8/23/2004	50.0	**43.8**		56.0	**16.9**		100.0	**42.6**		140.0	**51.6**		146.0	**54.5**
8/30/2004	83.0	**35.7**		13.0	**11.5**		57.0	**42.9**		72.0	**42.7**		57.0	**45.9**
9/7/2004	47.0	**23.4**		8.0	**14.2**		38.0	**39.8**		28.0	**52.4**		41.0	**50.2**
9/14/2004	36.0	**38.5**		20.0	**16.0**		25.0	**41.6**		25.0	**49.0**		30.0	**51.7**
9/20/2004	23.0	**43.8**		12.0	**16.9**		26.0	**42.6**		52.0	**51.6**		47.0	**54.5**
9/27/2004	18.0	**35.7**		8.0	**11.5**		103.0	**42.9**		54.0	**42.7**		62.0	**45.9**
% Exceeds		**0.0**			**0.0**			**0.0**			**0.0**			**0.0**

	AU 005_06			Au 005_06			AU 001_06	
	Boise River at Middleton Bridge			Boise River near Caldwell			Boise River near Parma	
Date	*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean		*E. coli* cfu/100 mL	Geomean
8/23/2005	132	**221**		140	**80**		240	**130**
8/30/2005	220	**245**		360	**62**		79	**117**
9/6/2005	140	**199**		330	**64**		90	**167**
9/13/2005	76	**149**		33	**42**		170	**179**
9/20/2005	1700	**126**		6	**46**		130	**145**
9/27/2005	220	**48**		40	**82**		140	**109**
10/3/2005	79	**52**		410	**135**		460	**97**
10/11/2005	33	**48**		41	**92**		130	**66**
10/18/2005	33	**66**		49	**88**		58	**55**
10/24/2005	14	**72**		112	**113**		31	**67**
11/1/2005	330	**92**		490	**98**		79	**125**
11/8/2005	49	**81**		60	**62**		70	**131**
11/15/2005	170	**69**		33	**51**		49	**147**
11/21/2005	49	**58**		170	**58**		160	**161**
11/29/2005	49	**66**		56	**79**		700	**245**
12/6/2005	170	**81**		49	**62**		100	**131**
12/13/2005	22	**69**		23	**51**		124	**147**
12/19/2005	70	**58**		60	**58**		79	**161**
12/27/2005	100	**66**		790	**79**		1300	**245**
% Exceeds		**26.0**			**5.0**			**63.0**

AU = assessment unit; cfu = colony-forming unit

Table C-11. Water discharge and temperature data collection locations and data file quality assurance annotation for Lower Boise River Mainstem Tributary Temperature Analysis Data Summary and Technical Report, June 2005. Provided by the City of Boise, January 2009.

Temperature collection site location		
	Latitude	Longitude
Boise River at Notus	43.71953	-116.79806
Boise River at Caldwell	43.67806	-116.698056
Conway Gulch	43.72667	-116.80333
Dixie Slough	43.73083	-116.88833
Fifteen Mile Creek	43.68734	-116.59035
Indian Creek	43.67385	-116.70142
Mason Creek	43.6835	-116.66733
Mill Slough	43.70111	-116.62222
Willow Creek	43.70667	-116.62972

Temperature data files (February 2004 to October 2004)	Notes
Boise_Notus_up_1.xls	
Boise_Notus_dwn_1.xls	sensor pulled out of water on 9/18/04
Caldwell_up1.xls	
Caldwell_dwn.xls	missing 3/21 to 3/24/2004 sensor out of water
Conway_up_1.xls	missing 7/11 to 7/30/2004 sensor out of water
Dixie_up_1.xls	
Dixie_dwn_1.xls	
Fifteenmile_up_1.xls	
Fifteenmile_dwn_1.xls	
Indian_up.xls	
Indian_dwn.xls	
Mason_up_1.xls	
Mason_dwn.xls	missing 15:00 to 21:00 on 3/24/04, checked and relaunched
Temperature data files (February 2004 to October 2004)	Notes

Mill_up.xls	missing 3/24 to 6/24/04, sensor taken
Mill_dwn_1.xls	
Willow_up_1.xls	missing 3:00 to 16:00 on 8/8/04; 3/24 to 4/5/2004 sensor may have been pulled out of water
Willow_dwn_1.xls	missing 2/17 to 3/24/2004, sensor pulled out; from approx. 4/30 to 6/25/2004 sensor buried under 1 ft. of coarse sand

Table C-12. Daily average discharge (Q) data used to create Lower Boise River Mainstem Tributary Temperature Analysis Data Summary and Technical Report, June 2005. Data reported in cubic feet per second (cfs), provided by the City of Boise, January 2009.

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2003274	45.5	13212890F2003274	232.3	13210810F2003274	134.8	13211445F2003274	76.5	13210849F2003274	17
13212550F2003275	45	13212890F2003275	228.7	13210810F2003275	133.7	13211445F2003275	74	13210849F2003275	17
13212550F2003276	44.5	13212890F2003276	225	13210810F2003276	132.5	13211445F2003276	71.5	13210849F2003276	17
13212550F2003277	44	13212890F2003277	221.3	13210810F2003277	131.3	13211445F2003277	69	13210849F2003277	17
13212550F2003278	43.5	13212890F2003278	217.7	13210810F2003278	130.2	13211445F2003278	66.5	13210849F2003278	17
13212550F2003279	43	13212890F2003279	214	13210810F2003279	129	13211445F2003279	64	13210849F2003279	17
13212550F2003280	40.1	13212890F2003280	211	13210810F2003280	126.5	13211445F2003280	66.1	13210849F2003280	16.7
13212550F2003281	37.3	13212890F2003281	208	13210810F2003281	124	13211445F2003281	68.3	13210849F2003281	16.4
13212550F2003282	34.4	13212890F2003282	205	13210810F2003282	121.5	13211445F2003282	70.4	13210849F2003282	16.1
13212550F2003283	31.6	13212890F2003283	202	13210810F2003283	119	13211445F2003283	72.6	13210849F2003283	15.9
13212550F2003284	28.7	13212890F2003284	199	13210810F2003284	116.5	13211445F2003284	74.7	13210849F2003284	15.6
13212550F2003285	25.9	13212890F2003285	196	13210810F2003285	114	13211445F2003285	76.9	13210849F2003285	15.3
13212550F2003286	23	13212890F2003286	193	13210810F2003286	113	13211445F2003286	79	13210849F2003286	15
13212550F2003287	24.3	13212890F2003287	190.2	13210810F2003287	112	13211445F2003287	79.4	13210849F2003287	14.2
13212550F2003288	25.6	13212890F2003288	187.3	13210810F2003288	111	13211445F2003288	79.9	13210849F2003288	13.3
13212550F2003289	26.9	13212890F2003289	184.5	13210810F2003289	110	13211445F2003289	80.3	13210849F2003289	12.5
13212550F2003290	28.1	13212890F2003290	181.7	13210810F2003290	109	13211445F2003290	80.7	13210849F2003290	11.7
13212550F2003291	29.4	13212890F2003291	178.8	13210810F2003291	108	13211445F2003291	81.1	13210849F2003291	10.8

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2003292	30.7	13212890F2003292	176	13210810F2003292	107	13211445F2003292	81.6	13210849F2003292	10
13212550F2003293	32	13212890F2003293	169.9	13210810F2003293	106	13211445F2003293	82	13210849F2003293	9.6
13212550F2003294	31	13212890F2003294	163.8	13210810F2003294	97.6	13211445F2003294	78.6	13210849F2003294	9.3
13212550F2003295	30	13212890F2003295	157.6	13210810F2003295	89.1	13211445F2003295	75.1	13210849F2003295	8.9
13212550F2003296	29	13212890F2003296	151.5	13210810F2003296	80.7	13211445F2003296	71.7	13210849F2003296	8.5
13212550F2003297	28	13212890F2003297	145.4	13210810F2003297	72.3	13211445F2003297	68.3	13210849F2003297	8.1
13212550F2003298	27	13212890F2003298	139.3	13210810F2003298	63.9	13211445F2003298	64.9	13210849F2003298	7.8
13212550F2003299	26	13212890F2003299	133.1	13210810F2003299	55.4	13211445F2003299	61.4	13210849F2003299	7.4
13212550F2003300	25	13212890F2003300	127	13210810F2003300	47	13211445F2003300	58	13210849F2003300	7
13212550F2003301	25	13212890F2003301	127	13210810F2003301	47	13211445F2003301	58	13210849F2003301	7
13212550F2003302	25	13212890F2003302	127	13210810F2003302	47	13211445F2003302	58	13210849F2003302	7
13212550F2003303	25	13212890F2003303	127	13210810F2003303	47	13211445F2003303	58	13210849F2003303	7
13212550F2003304	25	13212890F2003304	127	13210810F2003304	47	13211445F2003304	58	13210849F2003304	7
13212550F2004092	6	13212890F2004092	57	13210810F2004092	31	13211445F2004092	27	13210849F2004092	5
13212550F2004093	6	13212890F2004093	57	13210810F2004093	31	13211445F2004093	27	13210849F2004093	5
13212550F2004094	6	13212890F2004094	57	13210810F2004094	31	13211445F2004094	27	13210849F2004094	5
13212550F2004095	6	13212890F2004095	57	13210810F2004095	31	13211445F2004095	27	13210849F2004095	5
13212550F2004096	6	13212890F2004096	57	13210810F2004096	31	13211445F2004096	27	13210849F2004096	5
13212550F2004097	10.7	13212890F2004097	61.1	13210810F2004097	35.7	13211445F2004097	32.3	13210849F2004097	6.1
13212550F2004098	15.4	13212890F2004098	65.3	13210810F2004098	40.4	13211445F2004098	37.6	13210849F2004098	7.3
13212550F2004099	20.1	13212890F2004099	69.4	13210810F2004099	45.1	13211445F2004099	42.9	13210849F2004099	8.4
13212550F2004100	24.9	13212890F2004100	73.6	13210810F2004100	49.9	13211445F2004100	48.1	13210849F2004100	9.6
13212550F2004101	29.6	13212890F2004101	77.7	13210810F2004101	54.6	13211445F2004101	53.4	13210849F2004101	10.7
13212550F2004102	34.3	13212890F2004102	81.9	13210810F2004102	59.3	13211445F2004102	58.7	13210849F2004102	11.9
13212550F2004103	39	13212890F2004103	86	13210810F2004103	64	13211445F2004103	64	13210849F2004103	13
13212550F2004104	40	13212890F2004104	89	13210810F2004104	68.1	13211445F2004104	68	13210849F2004104	13.7
13212550F2004105	41	13212890F2004105	92	13210810F2004105	72.3	13211445F2004105	72	13210849F2004105	14.4

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004106	42	13212890F2004106	95	13210810F2004106	76.4	13211445F2004106	76	13210849F2004106	15.1
13212550F2004107	43	13212890F2004107	98	13210810F2004107	80.6	13211445F2004107	80	13210849F2004107	15.9
13212550F2004108	44	13212890F2004108	101	13210810F2004108	84.7	13211445F2004108	84	13210849F2004108	16.6
13212550F2004109	45	13212890F2004109	104	13210810F2004109	88.9	13211445F2004109	88	13210849F2004109	17.3
13212550F2004110	46	13212890F2004110	107	13210810F2004110	93	13211445F2004110	92	13210849F2004110	18
13212550F2004111	47.6	13212890F2004111	112.9	13210810F2004111	98.4	13211445F2004111	94.1	13210849F2004111	18.3
13212550F2004112	49.1	13212890F2004112	118.7	13210810F2004112	103.9	13211445F2004112	96.3	13210849F2004112	18.6
13212550F2004113	50.7	13212890F2004113	124.6	13210810F2004113	109.3	13211445F2004113	98.4	13210849F2004113	18.9
13212550F2004114	52.3	13212890F2004114	130.4	13210810F2004114	114.7	13211445F2004114	100.6	13210849F2004114	19.1
13212550F2004115	53.9	13212890F2004115	136.3	13210810F2004115	120.1	13211445F2004115	102.7	13210849F2004115	19.4
13212550F2004116	55.4	13212890F2004116	142.1	13210810F2004116	125.6	13211445F2004116	104.9	13210849F2004116	19.7
13212550F2004117	57	13212890F2004117	148	13210810F2004117	131	13211445F2004117	107	13210849F2004117	20
13212550F2004118	57	13212890F2004118	148	13210810F2004118	131	13211445F2004118	107	13210849F2004118	20
13212550F2004119	57.7	13212890F2004119	157.8	13210810F2004119	138	13211445F2004119	111.2	13210849F2004119	20.5
13212550F2004120	58.3	13212890F2004120	167.7	13210810F2004120	145	13211445F2004120	115.3	13210849F2004120	21
13212550F2004121	59	13212890F2004121	177.5	13210810F2004121	152	13211445F2004121	119.5	13210849F2004121	21.5
13212550F2004122	59.7	13212890F2004122	187.3	13210810F2004122	159	13211445F2004122	123.7	13210849F2004122	22
13212550F2004123	60.3	13212890F2004123	197.2	13210810F2004123	166	13211445F2004123	127.8	13210849F2004123	22.5
13212550F2004124	61	13212890F2004124	207	13210810F2004124	173	13211445F2004124	132	13210849F2004124	23
13212550F2004125	61	13212890F2004125	207	13210810F2004125	173	13211445F2004125	132	13210849F2004125	23
13212550F2004126	63.5	13212890F2004126	212.8	13210810F2004126	178.2	13211445F2004126	133.5	13210849F2004126	24
13212550F2004127	66	13212890F2004127	218.7	13210810F2004127	183.3	13211445F2004127	135	13210849F2004127	25
13212550F2004128	68.5	13212890F2004128	224.5	13210810F2004128	188.5	13211445F2004128	136.5	13210849F2004128	26
13212550F2004129	71	13212890F2004129	230.3	13210810F2004129	193.7	13211445F2004129	138	13210849F2004129	27
13212550F2004130	73.5	13212890F2004130	236.2	13210810F2004130	198.8	13211445F2004130	139.5	13210849F2004130	28
13212550F2004131	76	13212890F2004131	242	13210810F2004131	204	13211445F2004131	141	13210849F2004131	29
13212550F2004132	76	13212890F2004132	242	13210810F2004132	204	13211445F2004132	141	13210849F2004132	29

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004133	76.5	13212890F2004133	243.8	13210810F2004133	205.2	13211445F2004133	137.8	13210849F2004133	30.2
13212550F2004134	77	13212890F2004134	245.7	13210810F2004134	206.3	13211445F2004134	134.7	13210849F2004134	31.3
13212550F2004135	77.5	13212890F2004135	247.5	13210810F2004135	207.5	13211445F2004135	131.5	13210849F2004135	32.5
13212550F2004136	78	13212890F2004136	249.3	13210810F2004136	208.7	13211445F2004136	128.3	13210849F2004136	33.7
13212550F2004137	78.5	13212890F2004137	251.2	13210810F2004137	209.8	13211445F2004137	125.2	13210849F2004137	34.8
13212550F2004138	79	13212890F2004138	253	13210810F2004138	211	13211445F2004138	122	13210849F2004138	36
13212550F2004139	79	13212890F2004139	253	13210810F2004139	211	13211445F2004139	122	13210849F2004139	36
13212550F2004140	80.2	13212890F2004140	256	13210810F2004140	216.3	13211445F2004140	124.8	13210849F2004140	35
13212550F2004141	81.3	13212890F2004141	259	13210810F2004141	221.7	13211445F2004141	127.7	13210849F2004141	34
13212550F2004142	82.5	13212890F2004142	262	13210810F2004142	227	13211445F2004142	130.5	13210849F2004142	33
13212550F2004143	83.7	13212890F2004143	265	13210810F2004143	232.3	13211445F2004143	133.3	13210849F2004143	32
13212550F2004144	84.8	13212890F2004144	268	13210810F2004144	237.7	13211445F2004144	136.2	13210849F2004144	31
13212550F2004145	86	13212890F2004145	271	13210810F2004145	243	13211445F2004145	139	13210849F2004145	30
13212550F2004146	83.9	13212890F2004146	267.9	13210810F2004146	240.6	13211445F2004146	137.1	13210849F2004146	29.6
13212550F2004147	81.7	13212890F2004147	264.7	13210810F2004147	238.1	13211445F2004147	135.3	13210849F2004147	29.1
13212550F2004148	79.6	13212890F2004148	261.6	13210810F2004148	235.7	13211445F2004148	133.4	13210849F2004148	28.7
13212550F2004149	77.4	13212890F2004149	258.4	13210810F2004149	233.3	13211445F2004149	131.6	13210849F2004149	28.3
13212550F2004150	75.3	13212890F2004150	255.3	13210810F2004150	230.9	13211445F2004150	129.7	13210849F2004150	27.9
13212550F2004151	73.1	13212890F2004151	252.1	13210810F2004151	228.4	13211445F2004151	127.9	13210849F2004151	27.4
13212550F2004152	71	13212890F2004152	249	13210810F2004152	226	13211445F2004152	126	13210849F2004152	27
13212550F2004153	71	13212890F2004153	249	13210810F2004153	226	13211445F2004153	126	13210849F2004153	27
13212550F2004154	71.5	13212890F2004154	246.2	13210810F2004154	221.2	13211445F2004154	119.7	13210849F2004154	26.2
13212550F2004155	72	13212890F2004155	243.3	13210810F2004155	216.3	13211445F2004155	113.3	13210849F2004155	25.3
13212550F2004156	72.5	13212890F2004156	240.5	13210810F2004156	211.5	13211445F2004156	107	13210849F2004156	24.5
13212550F2004157	73	13212890F2004157	237.7	13210810F2004157	206.7	13211445F2004157	100.7	13210849F2004157	23.7
13212550F2004158	73.5	13212890F2004158	234.8	13210810F2004158	201.8	13211445F2004158	94.3	13210849F2004158	22.8
13212550F2004159	74	13212890F2004159	232	13210810F2004159	197	13211445F2004159	88	13210849F2004159	22

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004160	74	13212890F2004160	232	13210810F2004160	197	13211445F2004160	88	13210849F2004160	22
13212550F2004161	73.1	13212890F2004161	230.8	13210810F2004161	194.4	13211445F2004161	87.1	13210849F2004161	21.7
13212550F2004162	72.2	13212890F2004162	229.5	13210810F2004162	191.8	13211445F2004162	86.2	13210849F2004162	21.4
13212550F2004163	71.2	13212890F2004163	228.3	13210810F2004163	189.2	13211445F2004163	85.2	13210849F2004163	21.1
13212550F2004164	70.3	13212890F2004164	227.1	13210810F2004164	186.5	13211445F2004164	84.3	13210849F2004164	20.8
13212550F2004165	69.4	13212890F2004165	225.8	13210810F2004165	183.9	13211445F2004165	83.4	13210849F2004165	20.5
13212550F2004166	68.5	13212890F2004166	224.6	13210810F2004166	181.3	13211445F2004166	82.5	13210849F2004166	20.2
13212550F2004167	67.5	13212890F2004167	223.4	13210810F2004167	178.7	13211445F2004167	81.5	13210849F2004167	19.8
13212550F2004168	66.6	13212890F2004168	222.2	13210810F2004168	176.1	13211445F2004168	80.6	13210849F2004168	19.5
13212550F2004169	65.7	13212890F2004169	220.9	13210810F2004169	173.5	13211445F2004169	79.7	13210849F2004169	19.2
13212550F2004170	64.8	13212890F2004170	219.7	13210810F2004170	170.8	13211445F2004170	78.8	13210849F2004170	18.9
13212550F2004171	63.8	13212890F2004171	218.5	13210810F2004171	168.2	13211445F2004171	77.8	13210849F2004171	18.6
13212550F2004172	62.9	13212890F2004172	217.2	13210810F2004172	165.6	13211445F2004172	76.9	13210849F2004172	18.3
13212550F2004173	62	13212890F2004173	216	13210810F2004173	163	13211445F2004173	76	13210849F2004173	18
13212550F2004174	62	13212890F2004174	216	13210810F2004174	163	13211445F2004174	76	13210849F2004174	18
13212550F2004175	60.5	13212890F2004175	210.5	13210810F2004175	160.3	13211445F2004175	73.7	13210849F2004175	18.3
13212550F2004176	59	13212890F2004176	205	13210810F2004176	157.7	13211445F2004176	71.3	13210849F2004176	18.7
13212550F2004177	57.5	13212890F2004177	199.5	13210810F2004177	155	13211445F2004177	69	13210849F2004177	19
13212550F2004178	56	13212890F2004178	194	13210810F2004178	152.3	13211445F2004178	66.7	13210849F2004178	19.3
13212550F2004179	54.5	13212890F2004179	188.5	13210810F2004179	149.7	13211445F2004179	64.3	13210849F2004179	19.7
13212550F2004180	53	13212890F2004180	183	13210810F2004180	147	13211445F2004180	62	13210849F2004180	20
13212550F2004181	52	13212890F2004181	180.3	13210810F2004181	145.9	13211445F2004181	60.7	13210849F2004181	19.9
13212550F2004182	51	13212890F2004182	177.6	13210810F2004182	144.7	13211445F2004182	59.4	13210849F2004182	19.7
13212550F2004183	50	13212890F2004183	174.9	13210810F2004183	143.6	13211445F2004183	58.1	13210849F2004183	19.6
13212550F2004184	49	13212890F2004184	172.1	13210810F2004184	142.4	13211445F2004184	56.9	13210849F2004184	19.4
13212550F2004185	48	13212890F2004185	169.4	13210810F2004185	141.3	13211445F2004185	55.6	13210849F2004185	19.3
13212550F2004186	47	13212890F2004186	166.7	13210810F2004186	140.1	13211445F2004186	54.3	13210849F2004186	19.1

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004187	46	13212890F2004187	164	13210810F2004187	139	13211445F2004187	53	13210849F2004187	19
13212550F2004188	46	13212890F2004188	164	13210810F2004188	139	13211445F2004188	53	13210849F2004188	19
13212550F2004189	45.5	13212890F2004189	163.2	13210810F2004189	135.2	13211445F2004189	56.8	13210849F2004189	18.7
13212550F2004190	45	13212890F2004190	162.3	13210810F2004190	131.3	13211445F2004190	60.7	13210849F2004190	18.3
13212550F2004191	44.5	13212890F2004191	161.5	13210810F2004191	127.5	13211445F2004191	64.5	13210849F2004191	18
13212550F2004192	44	13212890F2004192	160.7	13210810F2004192	123.7	13211445F2004192	68.3	13210849F2004192	17.7
13212550F2004193	43.5	13212890F2004193	159.8	13210810F2004193	119.8	13211445F2004193	72.2	13210849F2004193	17.3
13212550F2004194	43	13212890F2004194	159	13210810F2004194	116	13211445F2004194	76	13210849F2004194	17
13212550F2004195	43	13212890F2004195	159	13210810F2004195	116	13211445F2004195	76	13210849F2004195	17
13212550F2004196	41.8	13212890F2004196	161.8	13210810F2004196	116.8	13211445F2004196	76.8	13210849F2004196	17.7
13212550F2004197	40.7	13212890F2004197	164.7	13210810F2004197	117.7	13211445F2004197	77.7	13210849F2004197	18.3
13212550F2004198	39.5	13212890F2004198	167.5	13210810F2004198	118.5	13211445F2004198	78.5	13210849F2004198	19
13212550F2004199	38.3	13212890F2004199	170.3	13210810F2004199	119.3	13211445F2004199	79.3	13210849F2004199	19.7
13212550F2004200	37.2	13212890F2004200	173.2	13210810F2004200	120.2	13211445F2004200	80.2	13210849F2004200	20.3
13212550F2004201	36	13212890F2004201	176	13210810F2004201	121	13211445F2004201	81	13210849F2004201	21
13212550F2004202	36	13212890F2004202	176	13210810F2004202	121	13211445F2004202	81	13210849F2004202	21
13212550F2004203	36.5	13212890F2004203	173.7	13210810F2004203	120.2	13211445F2004203	82.8	13210849F2004203	20.7
13212550F2004204	37	13212890F2004204	171.4	13210810F2004204	119.4	13211445F2004204	84.6	13210849F2004204	20.4
13212550F2004205	37.5	13212890F2004205	169.1	13210810F2004205	118.6	13211445F2004205	86.4	13210849F2004205	20.1
13212550F2004206	38	13212890F2004206	166.8	13210810F2004206	117.8	13211445F2004206	88.2	13210849F2004206	19.8
13212550F2004207	38.5	13212890F2004207	164.5	13210810F2004207	117	13211445F2004207	90	13210849F2004207	19.5
13212550F2004208	39	13212890F2004208	162.2	13210810F2004208	116.2	13211445F2004208	91.8	13210849F2004208	19.2
13212550F2004209	39	13212890F2004209	162	13210810F2004209	116	13211445F2004209	92	13210849F2004209	19
13212550F2004210	37.7	13212890F2004210	160.5	13210810F2004210	114.8	13211445F2004210	90.5	13210849F2004210	18.8
13212550F2004211	36.4	13212890F2004211	159	13210810F2004211	113.6	13211445F2004211	89	13210849F2004211	18.6
13212550F2004212	35.1	13212890F2004212	157.5	13210810F2004212	112.4	13211445F2004212	87.5	13210849F2004212	18.4
13212550F2004213	33.8	13212890F2004213	156	13210810F2004213	111.2	13211445F2004213	86	13210849F2004213	18.2

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004214	32.5	13212890F2004214	154.5	13210810F2004214	110	13211445F2004214	84.5	13210849F2004214	18
13212550F2004215	31.2	13212890F2004215	153	13210810F2004215	108.8	13211445F2004215	83	13210849F2004215	17.8
13212550F2004216	31	13212890F2004216	153	13210810F2004216	109	13211445F2004216	83	13210849F2004216	18
13212550F2004217	30.3	13212890F2004217	152	13210810F2004217	106.2	13211445F2004217	80.7	13210849F2004217	18
13212550F2004218	29.6	13212890F2004218	151	13210810F2004218	103.4	13211445F2004218	78.4	13210849F2004218	18
13212550F2004219	28.9	13212890F2004219	150	13210810F2004219	100.6	13211445F2004219	76.1	13210849F2004219	18
13212550F2004220	28.2	13212890F2004220	149	13210810F2004220	97.8	13211445F2004220	73.8	13210849F2004220	18
13212550F2004221	27.5	13212890F2004221	148	13210810F2004221	95	13211445F2004221	71.5	13210849F2004221	18
13212550F2004222	26.8	13212890F2004222	147	13210810F2004222	92.2	13211445F2004222	69.2	13210849F2004222	18
13212550F2004223	27	13212890F2004223	147	13210810F2004223	92	13211445F2004223	69	13210849F2004223	18
13212550F2004224	28.2	13212890F2004224	149.3	13210810F2004224	93.8	13211445F2004224	69.5	13210849F2004224	18.8
13212550F2004225	29.4	13212890F2004225	151.6	13210810F2004225	95.6	13211445F2004225	70	13210849F2004225	19.6
13212550F2004226	30.6	13212890F2004226	153.9	13210810F2004226	97.4	13211445F2004226	70.5	13210849F2004226	20.4
13212550F2004227	31.8	13212890F2004227	156.2	13210810F2004227	99.2	13211445F2004227	71	13210849F2004227	21.2
13212550F2004228	33	13212890F2004228	158.5	13210810F2004228	101	13211445F2004228	71.5	13210849F2004228	22
13212550F2004229	34.2	13212890F2004229	160.8	13210810F2004229	102.8	13211445F2004229	72	13210849F2004229	22.8
13212550F2004230	34	13212890F2004230	161	13210810F2004230	103	13211445F2004230	72	13210849F2004230	23
13212550F2004231	35.5	13212890F2004231	163	13210810F2004231	107	13211445F2004231	70.5	13210849F2004231	22.5
13212550F2004232	37	13212890F2004232	165	13210810F2004232	111	13211445F2004232	69	13210849F2004232	22
13212550F2004233	38.5	13212890F2004233	167	13210810F2004233	115	13211445F2004233	67.5	13210849F2004233	21.5
13212550F2004234	40	13212890F2004234	169	13210810F2004234	119	13211445F2004234	66	13210849F2004234	21
13212550F2004235	41.5	13212890F2004235	171	13210810F2004235	123	13211445F2004235	64.5	13210849F2004235	20.5
13212550F2004236	43	13212890F2004236	173	13210810F2004236	127	13211445F2004236	63	13210849F2004236	20
13212550F2004237	43	13212890F2004237	173	13210810F2004237	127	13211445F2004237	63	13210849F2004237	20
13212550F2004238	43.7	13212890F2004238	170.7	13210810F2004238	125.2	13211445F2004238	61.8	13210849F2004238	19.7
13212550F2004239	44.4	13212890F2004239	168.4	13210810F2004239	123.4	13211445F2004239	60.6	13210849F2004239	19.4
13212550F2004240	45.1	13212890F2004240	166.1	13210810F2004240	121.6	13211445F2004240	59.4	13210849F2004240	19.1

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004241	45.8	13212890F2004241	163.8	13210810F2004241	119.8	13211445F2004241	58.2	13210849F2004241	18.8
13212550F2004242	46.5	13212890F2004242	161.5	13210810F2004242	118	13211445F2004242	57	13210849F2004242	18.5
13212550F2004243	47.2	13212890F2004243	159.2	13210810F2004243	116.2	13211445F2004243	55.8	13210849F2004243	18.2
13212550F2004244	47	13212890F2004244	159	13210810F2004244	116	13211445F2004244	56	13210849F2004244	18
13212550F2004245	45.7	13212890F2004245	157	13210810F2004245	115.2	13211445F2004245	54.5	13210849F2004245	18.3
13212550F2004246	44.4	13212890F2004246	155	13210810F2004246	114.4	13211445F2004246	53	13210849F2004246	18.6
13212550F2004247	43.1	13212890F2004247	153	13210810F2004247	113.6	13211445F2004247	51.5	13210849F2004247	18.9
13212550F2004248	41.8	13212890F2004248	151	13210810F2004248	112.8	13211445F2004248	50	13210849F2004248	19.2
13212550F2004249	40.5	13212890F2004249	149	13210810F2004249	112	13211445F2004249	48.5	13210849F2004249	19.5
13212550F2004250	39.2	13212890F2004250	147	13210810F2004250	111.2	13211445F2004250	47	13210849F2004250	19.8
13212550F2004251	39	13212890F2004251	147	13210810F2004251	111	13211445F2004251	47	13210849F2004251	20
13212550F2004252	37.8	13212890F2004252	151.3	13210810F2004252	113.5	13211445F2004252	49.5	13210849F2004252	19.5
13212550F2004253	36.6	13212890F2004253	155.6	13210810F2004253	116	13211445F2004253	52	13210849F2004253	19
13212550F2004254	35.4	13212890F2004254	159.9	13210810F2004254	118.5	13211445F2004254	54.5	13210849F2004254	18.5
13212550F2004255	34.2	13212890F2004255	164.2	13210810F2004255	121	13211445F2004255	57	13210849F2004255	18
13212550F2004256	33	13212890F2004256	168.5	13210810F2004256	123.5	13211445F2004256	59.5	13210849F2004256	17.5
13212550F2004257	31.8	13212890F2004257	172.8	13210810F2004257	126	13211445F2004257	62	13210849F2004257	17
13212550F2004258	32	13212890F2004258	173	13210810F2004258	126	13211445F2004258	62	13210849F2004258	17
13212550F2004259	34.3	13212890F2004259	179.3	13210810F2004259	129.5	13211445F2004259	61.5	13210849F2004259	17.3
13212550F2004260	36.6	13212890F2004260	185.6	13210810F2004260	133	13211445F2004260	61	13210849F2004260	17.6
13212550F2004261	38.9	13212890F2004261	191.9	13210810F2004261	136.5	13211445F2004261	60.5	13210849F2004261	17.9
13212550F2004262	41.2	13212890F2004262	198.2	13210810F2004262	140	13211445F2004262	60	13210849F2004262	18.2
13212550F2004263	43.5	13212890F2004263	204.5	13210810F2004263	143.5	13211445F2004263	59.5	13210849F2004263	18.5
13212550F2004264	45.8	13212890F2004264	210.8	13210810F2004264	147	13211445F2004264	59	13210849F2004264	18.8
13212550F2004265	46	13212890F2004265	210	13210810F2004265	147	13211445F2004265	59	13210849F2004265	19
13212550F2004266	46.5	13212890F2004266	209.2	13210810F2004266	148	13211445F2004266	60	13210849F2004266	19
13212550F2004267	47	13212890F2004267	208.4	13210810F2004267	149	13211445F2004267	61	13210849F2004267	19

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004268	47.5	13212890F2004268	207.6	13210810F2004268	150	13211445F2004268	62	13210849F2004268	19
13212550F2004269	48	13212890F2004269	206.8	13210810F2004269	151	13211445F2004269	63	13210849F2004269	19
13212550F2004270	48.5	13212890F2004270	206	13210810F2004270	152	13211445F2004270	64	13210849F2004270	19
13212550F2004271	49	13212890F2004271	205.2	13210810F2004271	153	13211445F2004271	65	13210849F2004271	19
13212550F2004272	49	13212890F2004272	205	13210810F2004272	153	13211445F2004272	65	13210849F2004272	19
13212550F2004273	48.7	13212890F2004273	202.5	13210810F2004273	150.7	13211445F2004273	63.5	13210849F2004273	18.8
13212550F2004274	48.4	13212890F2004274	200	13210810F2004274	148.4	13211445F2004274	62	13210849F2004274	18.6
13212550F2004275	48.1	13212890F2004275	197.5	13210810F2004275	146.1	13211445F2004275	60.5	13210849F2004275	18.4
13212550F2004276	47.8	13212890F2004276	195	13210810F2004276	143.8	13211445F2004276	59	13210849F2004276	18.2
13212550F2004277	47.5	13212890F2004277	192.5	13210810F2004277	141.5	13211445F2004277	57.5	13210849F2004277	18
13212550F2004278	47.2	13212890F2004278	190	13210810F2004278	139.2	13211445F2004278	56	13210849F2004278	17.8
13212550F2004279	48	13212890F2004279	189.1	13210810F2004279	137.5	13211445F2004279	58	13210849F2004279	18.5
13212550F2004280	48.8	13212890F2004280	188.2	13210810F2004280	135.8	13211445F2004280	60	13210849F2004280	19.2
13212550F2004281	49.6	13212890F2004281	187.3	13210810F2004281	134.1	13211445F2004281	62	13210849F2004281	19.9
13212550F2004282	50.4	13212890F2004282	186.4	13210810F2004282	132.4	13211445F2004282	64	13210849F2004282	20.6
13212550F2004283	51.2	13212890F2004283	185.5	13210810F2004283	130.7	13211445F2004283	66	13210849F2004283	21.3
13212550F2004284	52	13212890F2004284	184.6	13210810F2004284	129	13211445F2004284	68	13210849F2004284	22
13212550F2004285	52.8	13212890F2004285	183.7	13210810F2004285	127.3	13211445F2004285	70	13210849F2004285	22.7
13212550F2004286	51.3	13212890F2004286	181	13210810F2004286	125.5	13211445F2004286	68.9	13210849F2004286	22.9
13212550F2004287	49.8	13212890F2004287	178.3	13210810F2004287	123.7	13211445F2004287	67.8	13210849F2004287	23.1
13212550F2004288	48.3	13212890F2004288	175.6	13210810F2004288	121.9	13211445F2004288	66.7	13210849F2004288	23.3
13212550F2004289	46.8	13212890F2004289	172.9	13210810F2004289	120.1	13211445F2004289	65.6	13210849F2004289	23.5
13212550F2004290	45.3	13212890F2004290	170.2	13210810F2004290	118.3	13211445F2004290	64.5	13210849F2004290	23.7
13212550F2004291	43.8	13212890F2004291	167.5	13210810F2004291	116.5	13211445F2004291	63.4	13210849F2004291	23.9
13212550F2004292	42.3	13212890F2004292	164.8	13210810F2004292	114.7	13211445F2004292	62.3	13210849F2004292	24.1
13212550F2004293	40.7	13212890F2004293	161.7	13210810F2004293	111.1	13211445F2004293	63.6	13210849F2004293	22.8
13212550F2004294	39.1	13212890F2004294	158.6	13210810F2004294	107.5	13211445F2004294	64.9	13210849F2004294	21.4

Conway 2004		Dixie Drain 2004		Fivemile 2004		Indian Creek 2004		Mason Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13212550F2004295	37.5	13212890F2004295	155.5	13210810F2004295	103.9	13211445F2004295	66.2	13210849F2004295	20
13212550F2004296	35.9	13212890F2004296	152.4	13210810F2004296	100.3	13211445F2004296	67.5	13210849F2004296	18.7
13212550F2004297	34.3	13212890F2004297	149.3	13210810F2004297	96.7	13211445F2004297	68.8	13210849F2004297	17.4
13212550F2004298	32.7	13212890F2004298	146.2	13210810F2004298	93.1	13211445F2004298	70.1	13210849F2004298	16
13212550F2004299	31.1	13212890F2004299	143.1	13210810F2004299	93.1	13211445F2004299	70.1	13210849F2004299	16
13212550F2004300	31.1	13212890F2004300	143.1	13210810F2004300	93.1	13211445F2004300	70.1	13210849F2004300	16
13212550F2004301	31.1	13212890F2004301	143.1	13210810F2004301	93.1	13211445F2004301	70.1	13210849F2004301	16
13212550F2004302	31.1	13212890F2004302	143.1	13210810F2004302	93.1	13211445F2004302	70.1	13210849F2004302	16
13212550F2004303	31.1	13212890F2004303	143.1	13210810F2004303	93.1	13211445F2004303	70.1	13210849F2004303	16
13212550F2004304	31.1	13212890F2004304	143.1	13210810F2004304	93.1	13211445F2004304	70.1	13210849F2004304	16
13212550F2004305	31.1	13212890F2004305	143.1	13210810F2004305	93.1	13211445F2004305	70.1	13210849F2004305	16

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2003274	125.2	13210824F2003274	42.5	13210831F2003274	83.7	13209450W2003274	17	13210835F2003274	11.2
13210980F2003275	123.3	13210824F2003275	42	13210831F2003275	82.3	13209450W2003275	17	13210835F2003275	11.3
13210980F2003276	121.5	13210824F2003276	41.5	13210831F2003276	81	13209450W2003276	17	13210835F2003276	11.5
13210980F2003277	119.7	13210824F2003277	41	13210831F2003277	79.7	13209450W2003277	17	13210835F2003277	11.7
13210980F2003278	117.8	13210824F2003278	40.5	13210831F2003278	78.3	13209450W2003278	17	13210835F2003278	11.8
13210980F2003279	116	13210824F2003279	40	13210831F2003279	77	13209450W2003279	17	13210835F2003279	12
13210980F2003280	113.7	13210824F2003280	39.6	13210831F2003280	76	13209450W2003280	17.1	13210835F2003280	11.7
13210980F2003281	111.4	13210824F2003281	39.1	13210831F2003281	75	13209450W2003281	17.3	13210835F2003281	11.4
13210980F2003282	109.1	13210824F2003282	38.7	13210831F2003282	74	13209450W2003282	17.4	13210835F2003282	11.1
13210980F2003283	106.9	13210824F2003283	38.3	13210831F2003283	73	13209450W2003283	17.5	13210835F2003283	10.9
13210980F2003284	104.6	13210824F2003284	37.9	13210831F2003284	72	13209450W2003284	17.6	13210835F2003284	10.6
13210980F2003285	102.3	13210824F2003285	37.4	13210831F2003285	71	13209450W2003285	17.8	13210835F2003285	10.3
13210980F2003286	100	13210824F2003286	37	13210831F2003286	70	13209450W2003286	17.9	13210835F2003286	10

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2003287	97.6	13210824F2003287	36	13210831F2003287	68.7	13209450W2003287	18	13210835F2003287	9.6
13210980F2003288	95.1	13210824F2003288	35	13210831F2003288	67.4	13209450W2003288	17.8	13210835F2003288	9.1
13210980F2003289	92.7	13210824F2003289	34	13210831F2003289	66.1	13209450W2003289	17.7	13210835F2003289	8.7
13210980F2003290	90.3	13210824F2003290	33	13210831F2003290	64.9	13209450W2003290	17.5	13210835F2003290	8.3
13210980F2003291	87.9	13210824F2003291	32	13210831F2003291	63.6	13209450W2003291	17.3	13210835F2003291	7.9
13210980F2003292	85.4	13210824F2003292	31	13210831F2003292	62.3	13209450W2003292	17.2	13210835F2003292	7.4
13210980F2003293	83	13210824F2003293	30	13210831F2003293	61	13209450W2003293	17	13210835F2003293	7
13210980F2003294	78.4	13210824F2003294	29	13210831F2003294	59	13209450W2003294	16.7	13210835F2003294	6.3
13210980F2003295	73.9	13210824F2003295	28	13210831F2003295	57	13209450W2003295	16.4	13210835F2003295	5.6
13210980F2003296	69.3	13210824F2003296	27	13210831F2003296	55	13209450W2003296	16.1	13210835F2003296	4.9
13210980F2003297	64.7	13210824F2003297	26	13210831F2003297	53	13209450W2003297	15.9	13210835F2003297	4.1
13210980F2003298	60.1	13210824F2003298	25	13210831F2003298	51	13209450W2003298	15.6	13210835F2003298	3.4
13210980F2003299	55.6	13210824F2003299	24	13210831F2003299	49	13209450W2003299	15.3	13210835F2003299	2.7
13210980F2003300	51	13210824F2003300	23	13210831F2003300	47	13209450W2003300	15	13210835F2003300	2
13210980F2003301	51	13210824F2003301	23	13210831F2003301	47	13209450W2003301	15	13210835F2003301	2
13210980F2003302	51	13210824F2003302	23	13210831F2003302	47	13209450W2003302	15	13210835F2003302	2
13210980F2003303	51	13210824F2003303	23	13210831F2003303	47	13209450W2003303	15	13210835F2003303	2
13210980F2003304	51	13210824F2003304	23	13210831F2003304	47	13209450W2003304	15	13210835F2003304	2
13210980F2004092	29	13210824F2004092	18	13210831F2004092	32	13209450W2004092	6	13210835F2004092	1
13210980F2004093	29	13210824F2004093	18	13210831F2004093	32	13209450W2004093	6	13210835F2004093	1
13210980F2004094	29	13210824F2004094	18	13210831F2004094	32	13209450W2004094	6	13210835F2004094	1
13210980F2004095	29	13210824F2004095	18	13210831F2004095	32	13209450W2004095	6	13210835F2004095	1
13210980F2004096	29	13210824F2004096	18	13210831F2004096	32	13209450W2004096	6	13210835F2004096	1
13210980F2004097	30.3	13210824F2004097	18.9	13210831F2004097	34.4	13209450W2004097	6.4	13210835F2004097	1.3
13210980F2004098	31.6	13210824F2004098	19.7	13210831F2004098	36.9	13209450W2004098	6.9	13210835F2004098	1.6
13210980F2004099	32.9	13210824F2004099	20.6	13210831F2004099	39.3	13209450W2004099	7.3	13210835F2004099	1.9
13210980F2004100	34.1	13210824F2004100	21.4	13210831F2004100	41.7	13209450W2004100	7.7	13210835F2004100	2.1
13210980F2004101	35.4	13210824F2004101	22.3	13210831F2004101	44.1	13209450W2004101	8.1	13210835F2004101	2.4

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004102	36.7	13210824F2004102	23.1	13210831F2004102	46.6	13209450W2004102	8.6	13210835F2004102	2.7
13210980F2004103	38	13210824F2004103	24	13210831F2004103	49	13209450W2004103	9	13210835F2004103	3
13210980F2004104	41.6	13210824F2004104	26.4	13210831F2004104	51	13209450W2004104	10.3	13210835F2004104	3.7
13210980F2004105	45.1	13210824F2004105	28.9	13210831F2004105	53	13209450W2004105	11.6	13210835F2004105	4.4
13210980F2004106	48.7	13210824F2004106	31.3	13210831F2004106	55	13209450W2004106	12.9	13210835F2004106	5.1
13210980F2004107	52.3	13210824F2004107	33.7	13210831F2004107	57	13209450W2004107	14.1	13210835F2004107	5.9
13210980F2004108	55.9	13210824F2004108	36.1	13210831F2004108	59	13209450W2004108	15.4	13210835F2004108	6.6
13210980F2004109	59.4	13210824F2004109	38.6	13210831F2004109	61	13209450W2004109	16.7	13210835F2004109	7.3
13210980F2004110	63	13210824F2004110	41	13210831F2004110	63	13209450W2004110	18	13210835F2004110	8
13210980F2004111	66	13210824F2004111	41.3	13210831F2004111	67.1	13209450W2004111	18.4	13210835F2004111	9.4
13210980F2004112	69	13210824F2004112	41.6	13210831F2004112	71.3	13209450W2004112	18.9	13210835F2004112	10.9
13210980F2004113	72	13210824F2004113	41.9	13210831F2004113	75.4	13209450W2004113	19.3	13210835F2004113	12.3
13210980F2004114	75	13210824F2004114	42.1	13210831F2004114	79.6	13209450W2004114	19.7	13210835F2004114	13.7
13210980F2004115	78	13210824F2004115	42.4	13210831F2004115	83.7	13209450W2004115	20.1	13210835F2004115	15.1
13210980F2004116	81	13210824F2004116	42.7	13210831F2004116	87.9	13209450W2004116	20.6	13210835F2004116	16.6
13210980F2004117	84	13210824F2004117	43	13210831F2004117	92	13209450W2004117	21	13210835F2004117	18
13210980F2004118	84	13210824F2004118	43	13210831F2004118	92	13209450W2004118	21	13210835F2004118	16
13210980F2004119	88	13210824F2004119	43.3	13210831F2004119	93.8	13209450W2004119	21.3	13210835F2004119	17.8
13210980F2004120	92	13210824F2004120	43.7	13210831F2004120	95.7	13209450W2004120	21.7	13210835F2004120	19.7
13210980F2004121	96	13210824F2004121	44	13210831F2004121	97.5	13209450W2004121	22	13210835F2004121	21.5
13210980F2004122	100	13210824F2004122	44.3	13210831F2004122	99.3	13209450W2004122	22.3	13210835F2004122	23.3
13210980F2004123	104	13210824F2004123	44.7	13210831F2004123	101.2	13209450W2004123	22.7	13210835F2004123	25.2
13210980F2004124	108	13210824F2004124	45	13210831F2004124	103	13209450W2004124	23	13210835F2004124	27
13210980F2004125	108	13210824F2004125	45	13210831F2004125	103	13209450W2004125	23	13210835F2004125	27
13210980F2004126	113.5	13210824F2004126	46	13210831F2004126	107.2	13209450W2004126	23.5	13210835F2004126	28.5
13210980F2004127	119	13210824F2004127	47	13210831F2004127	111.3	13209450W2004127	24	13210835F2004127	30
13210980F2004128	124.5	13210824F2004128	48	13210831F2004128	115.5	13209450W2004128	24.5	13210835F2004128	31.5
13210980F2004129	130	13210824F2004129	49	13210831F2004129	119.7	13209450W2004129	25	13210835F2004129	33

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004130	135.5	13210824F2004130	50	13210831F2004130	123.8	13209450W2004130	25.5	13210835F2004130	34.5
13210980F2004131	141	13210824F2004131	51	13210831F2004131	128	13209450W2004131	26	13210835F2004131	36
13210980F2004132	141	13210824F2004132	51	13210831F2004132	128	13209450W2004132	26	13210835F2004132	36
13210980F2004133	148.7	13210824F2004133	51.3	13210831F2004133	129	13209450W2004133	25.7	13210835F2004133	38.2
13210980F2004134	156.3	13210824F2004134	51.7	13210831F2004134	130	13209450W2004134	25.3	13210835F2004134	40.3
13210980F2004135	164	13210824F2004135	52	13210831F2004135	131	13209450W2004135	25	13210835F2004135	42.5
13210980F2004136	171.7	13210824F2004136	52.3	13210831F2004136	132	13209450W2004136	24.7	13210835F2004136	44.7
13210980F2004137	179.3	13210824F2004137	52.7	13210831F2004137	133	13209450W2004137	24.3	13210835F2004137	46.8
13210980F2004138	187	13210824F2004138	53	13210831F2004138	134	13209450W2004138	24	13210835F2004138	49
13210980F2004139	187	13210824F2004139	53	13210831F2004139	134	13209450W2004139	24	13210835F2004139	49
13210980F2004140	183.3	13210824F2004140	53.7	13210831F2004140	134.7	13209450W2004140	25	13210835F2004140	49.5
13210980F2004141	179.7	13210824F2004141	54.3	13210831F2004141	135.3	13209450W2004141	26	13210835F2004141	50
13210980F2004142	176	13210824F2004142	55	13210831F2004142	136	13209450W2004142	27	13210835F2004142	50.5
13210980F2004143	172.3	13210824F2004143	55.7	13210831F2004143	136.7	13209450W2004143	28	13210835F2004143	51
13210980F2004144	168.7	13210824F2004144	56.3	13210831F2004144	137.3	13209450W2004144	29	13210835F2004144	51.5
13210980F2004145	165	13210824F2004145	57	13210831F2004145	138	13209450W2004145	30	13210835F2004145	52
13210980F2004146	164.6	13210824F2004146	55.9	13210831F2004146	136	13209450W2004146	29.4	13210835F2004146	49.4
13210980F2004147	164.1	13210824F2004147	54.7	13210831F2004147	134	13209450W2004147	28.9	13210835F2004147	46.9
13210980F2004148	163.7	13210824F2004148	53.6	13210831F2004148	132	13209450W2004148	28.3	13210835F2004148	44.3
13210980F2004149	163.3	13210824F2004149	52.4	13210831F2004149	130	13209450W2004149	27.7	13210835F2004149	41.7
13210980F2004150	162.9	13210824F2004150	51.3	13210831F2004150	128	13209450W2004150	27.1	13210835F2004150	39.1
13210980F2004151	162.4	13210824F2004151	50.1	13210831F2004151	126	13209450W2004151	26.6	13210835F2004151	36.6
13210980F2004152	162	13210824F2004152	49	13210831F2004152	124	13209450W2004152	26	13210835F2004152	34
13210980F2004153	162	13210824F2004153	49	13210831F2004153	124	13209450W2004153	26	13210835F2004153	34
13210980F2004154	160.2	13210824F2004154	47.7	13210831F2004154	121	13209450W2004154	25	13210835F2004154	31.3
13210980F2004155	158.3	13210824F2004155	46.3	13210831F2004155	118	13209450W2004155	24	13210835F2004155	28.7
13210980F2004156	156.5	13210824F2004156	45	13210831F2004156	115	13209450W2004156	23	13210835F2004156	26
13210980F2004157	154.7	13210824F2004157	43.7	13210831F2004157	112	13209450W2004157	22	13210835F2004157	23.3

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004158	152.8	13210824F2004158	42.3	13210831F2004158	109	13209450W2004158	21	13210835F2004158	20.7
13210980F2004159	151	13210824F2004159	41	13210831F2004159	106	13209450W2004159	20	13210835F2004159	18
13210980F2004160	151	13210824F2004160	41	13210831F2004160	106	13209450W2004160	20	13210835F2004160	18
13210980F2004161	150.1	13210824F2004161	40.8	13210831F2004161	105	13209450W2004161	19.9	13210835F2004161	17.5
13210980F2004162	149.2	13210824F2004162	40.5	13210831F2004162	104	13209450W2004162	19.8	13210835F2004162	17.1
13210980F2004163	148.2	13210824F2004163	40.3	13210831F2004163	103	13209450W2004163	19.8	13210835F2004163	16.6
13210980F2004164	147.3	13210824F2004164	40.1	13210831F2004164	102	13209450W2004164	19.7	13210835F2004164	16.2
13210980F2004165	146.4	13210824F2004165	39.8	13210831F2004165	101	13209450W2004165	19.6	13210835F2004165	15.7
13210980F2004166	145.5	13210824F2004166	39.6	13210831F2004166	100	13209450W2004166	19.5	13210835F2004166	15.2
13210980F2004167	144.5	13210824F2004167	39.4	13210831F2004167	99	13209450W2004167	19.5	13210835F2004167	14.8
13210980F2004168	143.6	13210824F2004168	39.2	13210831F2004168	98	13209450W2004168	19.4	13210835F2004168	14.3
13210980F2004169	142.7	13210824F2004169	38.9	13210831F2004169	97	13209450W2004169	19.3	13210835F2004169	13.8
13210980F2004170	141.8	13210824F2004170	38.7	13210831F2004170	96	13209450W2004170	19.2	13210835F2004170	13.4
13210980F2004171	140.8	13210824F2004171	38.5	13210831F2004171	95	13209450W2004171	19.2	13210835F2004171	12.9
13210980F2004172	139.9	13210824F2004172	38.2	13210831F2004172	94	13209450W2004172	19.1	13210835F2004172	12.5
13210980F2004173	139	13210824F2004173	38	13210831F2004173	93	13209450W2004173	19	13210835F2004173	12
13210980F2004174	139	13210824F2004174	38	13210831F2004174	93	13209450W2004174	19	13210835F2004174	12
13210980F2004175	140.3	13210824F2004175	37.7	13210831F2004175	92	13209450W2004175	18.8	13210835F2004175	11.2
13210980F2004176	141.7	13210824F2004176	37.3	13210831F2004176	91	13209450W2004176	18.7	13210835F2004176	10.3
13210980F2004177	143	13210824F2004177	37	13210831F2004177	90	13209450W2004177	18.5	13210835F2004177	9.5
13210980F2004178	144.3	13210824F2004178	36.7	13210831F2004178	89	13209450W2004178	18.3	13210835F2004178	8.7
13210980F2004179	145.7	13210824F2004179	36.3	13210831F2004179	88	13209450W2004179	18.2	13210835F2004179	7.8
13210980F2004180	147	13210824F2004180	36	13210831F2004180	87	13209450W2004180	18	13210835F2004180	7
13210980F2004181	145.1	13210824F2004181	35.6	13210831F2004181	86.6	13209450W2004181	18	13210835F2004181	6.9
13210980F2004182	143.3	13210824F2004182	35.1	13210831F2004182	86.1	13209450W2004182	18	13210835F2004182	6.7
13210980F2004183	141.4	13210824F2004183	34.7	13210831F2004183	85.7	13209450W2004183	18	13210835F2004183	6.6
13210980F2004184	139.6	13210824F2004184	34.3	13210831F2004184	85.3	13209450W2004184	18	13210835F2004184	6.4
13210980F2004185	137.7	13210824F2004185	33.9	13210831F2004185	84.9	13209450W2004185	18	13210835F2004185	6.3

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004186	135.9	13210824F2004186	33.4	13210831F2004186	84.4	13209450W2004186	18	13210835F2004186	6.1
13210980F2004187	134	13210824F2004187	33	13210831F2004187	84	13209450W2004187	18	13210835F2004187	6
13210980F2004188	134	13210824F2004188	33	13210831F2004188	84	13209450W2004188	18	13210835F2004188	6
13210980F2004189	131.8	13210824F2004189	32	13210831F2004189	82.2	13209450W2004189	17.7	13210835F2004189	5.8
13210980F2004190	129.7	13210824F2004190	31	13210831F2004190	80.3	13209450W2004190	17.3	13210835F2004190	5.7
13210980F2004191	127.5	13210824F2004191	30	13210831F2004191	78.5	13209450W2004191	17	13210835F2004191	5.5
13210980F2004192	125.3	13210824F2004192	29	13210831F2004192	76.7	13209450W2004192	16.7	13210835F2004192	5.3
13210980F2004193	123.2	13210824F2004193	28	13210831F2004193	74.8	13209450W2004193	16.3	13210835F2004193	5.2
13210980F2004194	121	13210824F2004194	27	13210831F2004194	73	13209450W2004194	16	13210835F2004194	5
13210980F2004195	121	13210824F2004195	27	13210831F2004195	73	13209450W2004195	16	13210835F2004195	5
13210980F2004196	121.8	13210824F2004196	28.2	13210831F2004196	76	13209450W2004196	16.2	13210835F2004196	5.3
13210980F2004197	122.7	13210824F2004197	29.3	13210831F2004197	79	13209450W2004197	16.3	13210835F2004197	5.7
13210980F2004198	123.5	13210824F2004198	30.5	13210831F2004198	82	13209450W2004198	16.5	13210835F2004198	6
13210980F2004199	124.3	13210824F2004199	31.7	13210831F2004199	85	13209450W2004199	16.7	13210835F2004199	6.3
13210980F2004200	125.2	13210824F2004200	32.8	13210831F2004200	88	13209450W2004200	16.8	13210835F2004200	6.7
13210980F2004201	126	13210824F2004201	34	13210831F2004201	91	13209450W2004201	17	13210835F2004201	7
13210980F2004202	126	13210824F2004202	34	13210831F2004202	91	13209450W2004202	17	13210835F2004202	7
13210980F2004203	124.2	13210824F2004203	33	13210831F2004203	89.8	13209450W2004203	17.3	13210835F2004203	7.3
13210980F2004204	122.4	13210824F2004204	32	13210831F2004204	88.6	13209450W2004204	17.6	13210835F2004204	7.6
13210980F2004205	120.6	13210824F2004205	31	13210831F2004205	87.4	13209450W2004205	17.9	13210835F2004205	7.9
13210980F2004206	118.8	13210824F2004206	30	13210831F2004206	86.2	13209450W2004206	18.2	13210835F2004206	8.2
13210980F2004207	117	13210824F2004207	29	13210831F2004207	85	13209450W2004207	18.5	13210835F2004207	8.5
13210980F2004208	115.2	13210824F2004208	28	13210831F2004208	83.8	13209450W2004208	18.8	13210835F2004208	8.8
13210980F2004209	115	13210824F2004209	28	13210831F2004209	84	13209450W2004209	19	13210835F2004209	9
13210980F2004210	113.7	13210824F2004210	27.7	13210831F2004210	83.2	13209450W2004210	19.3	13210835F2004210	8.5
13210980F2004211	112.4	13210824F2004211	27.4	13210831F2004211	82.4	13209450W2004211	19.6	13210835F2004211	8
13210980F2004212	111.1	13210824F2004212	27.1	13210831F2004212	81.6	13209450W2004212	19.9	13210835F2004212	7.5
13210980F2004213	109.8	13210824F2004213	26.8	13210831F2004213	80.8	13209450W2004213	20.2	13210835F2004213	7

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004214	108.5	13210824F2004214	26.5	13210831F2004214	80	13209450W2004214	20.5	13210835F2004214	6.5
13210980F2004215	107.2	13210824F2004215	26.2	13210831F2004215	79.2	13209450W2004215	20.8	13210835F2004215	6
13210980F2004216	107	13210824F2004216	26	13210831F2004216	79	13209450W2004216	21	13210835F2004216	6
13210980F2004217	108.5	13210824F2004217	25.7	13210831F2004217	78.3	13209450W2004217	20.5	13210835F2004217	5.7
13210980F2004218	110	13210824F2004218	25.4	13210831F2004218	77.6	13209450W2004218	20	13210835F2004218	5.4
13210980F2004219	111.5	13210824F2004219	25.1	13210831F2004219	76.9	13209450W2004219	19.5	13210835F2004219	5.1
13210980F2004220	113	13210824F2004220	24.8	13210831F2004220	76.2	13209450W2004220	19	13210835F2004220	4.8
13210980F2004221	114.5	13210824F2004221	24.5	13210831F2004221	75.5	13209450W2004221	18.5	13210835F2004221	4.5
13210980F2004222	116	13210824F2004222	24.2	13210831F2004222	74.8	13209450W2004222	18	13210835F2004222	4.2
13210980F2004223	116	13210824F2004223	24	13210831F2004223	75	13209450W2004223	18	13210835F2004223	4
13210980F2004224	117.2	13210824F2004224	24.7	13210831F2004224	76	13209450W2004224	18.8	13210835F2004224	4.8
13210980F2004225	118.4	13210824F2004225	25.4	13210831F2004225	77	13209450W2004225	19.6	13210835F2004225	5.6
13210980F2004226	119.6	13210824F2004226	26.1	13210831F2004226	78	13209450W2004226	20.4	13210835F2004226	6.4
13210980F2004227	120.8	13210824F2004227	26.8	13210831F2004227	79	13209450W2004227	21.2	13210835F2004227	7.2
13210980F2004228	122	13210824F2004228	27.5	13210831F2004228	80	13209450W2004228	22	13210835F2004228	8
13210980F2004229	123.2	13210824F2004229	28.2	13210831F2004229	81	13209450W2004229	22.8	13210835F2004229	8.8
13210980F2004230	123	13210824F2004230	28	13210831F2004230	81	13209450W2004230	23	13210835F2004230	9
13210980F2004231	120.8	13210824F2004231	28.5	13210831F2004231	80.2	13209450W2004231	22.5	13210835F2004231	8.7
13210980F2004232	118.6	13210824F2004232	29	13210831F2004232	79.4	13209450W2004232	22	13210835F2004232	8.4
13210980F2004233	116.4	13210824F2004233	29.5	13210831F2004233	78.6	13209450W2004233	21.5	13210835F2004233	8.1
13210980F2004234	114.2	13210824F2004234	30	13210831F2004234	77.8	13209450W2004234	21	13210835F2004234	7.8
13210980F2004235	112	13210824F2004235	30.5	13210831F2004235	77	13209450W2004235	20.5	13210835F2004235	7.5
13210980F2004236	109.8	13210824F2004236	31	13210831F2004236	76.2	13209450W2004236	20	13210835F2004236	7.2
13210980F2004237	110	13210824F2004237	31	13210831F2004237	76	13209450W2004237	20	13210835F2004237	7
13210980F2004238	111.5	13210824F2004238	30.3	13210831F2004238	75.3	13209450W2004238	19.4	13210835F2004238	6.7
13210980F2004239	113	13210824F2004239	29.6	13210831F2004239	74.6	13209450W2004239	18.8	13210835F2004239	6.4
13210980F2004240	114.5	13210824F2004240	28.9	13210831F2004240	73.9	13209450W2004240	18.2	13210835F2004240	6.1
13210980F2004241	116	13210824F2004241	28.2	13210831F2004241	73.2	13209450W2004241	17.6	13210835F2004241	5.8

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004242	117.5	13210824F2004242	27.5	13210831F2004242	72.5	13209450W2004242	17	13210835F2004242	5.5
13210980F2004243	119	13210824F2004243	26.8	13210831F2004243	71.8	13209450W2004243	17	13210835F2004243	5.2
13210980F2004244	119	13210824F2004244	27	13210831F2004244	72	13209450W2004244	17	13210835F2004244	5
13210980F2004245	118	13210824F2004245	27.3	13210831F2004245	72.3	13209450W2004245	17.2	13210835F2004245	5.7
13210980F2004246	117	13210824F2004246	27.6	13210831F2004246	72.6	13209450W2004246	17.4	13210835F2004246	6.4
13210980F2004247	116	13210824F2004247	27.9	13210831F2004247	72.9	13209450W2004247	17.6	13210835F2004247	7.1
13210980F2004248	115	13210824F2004248	28.2	13210831F2004248	73.2	13209450W2004248	17.8	13210835F2004248	7.8
13210980F2004249	114	13210824F2004249	28.5	13210831F2004249	73.5	13209450W2004249	18	13210835F2004249	8.5
13210980F2004250	113	13210824F2004250	28.8	13210831F2004250	73.8	13209450W2004250	18.2	13210835F2004250	9.2
13210980F2004251	113	13210824F2004251	29	13210831F2004251	74	13209450W2004251	18	13210835F2004251	9
13210980F2004252	114.5	13210824F2004252	28.7	13210831F2004252	74.8	13209450W2004252	17.7	13210835F2004252	9.3
13210980F2004253	116	13210824F2004253	28.4	13210831F2004253	75.6	13209450W2004253	17.4	13210835F2004253	9.6
13210980F2004254	117.5	13210824F2004254	28.1	13210831F2004254	76.4	13209450W2004254	17.1	13210835F2004254	9.9
13210980F2004255	119	13210824F2004255	27.8	13210831F2004255	77.2	13209450W2004255	16.8	13210835F2004255	10.2
13210980F2004256	120.5	13210824F2004256	27.5	13210831F2004256	78	13209450W2004256	16.5	13210835F2004256	10.5
13210980F2004257	122	13210824F2004257	27.2	13210831F2004257	78.8	13209450W2004257	16.2	13210835F2004257	10.8
13210980F2004258	122	13210824F2004258	27	13210831F2004258	79	13209450W2004258	16	13210835F2004258	11
13210980F2004259	124.3	13210824F2004259	28	13210831F2004259	79.7	13209450W2004259	16.7	13210835F2004259	11.5
13210980F2004260	126.6	13210824F2004260	29	13210831F2004260	80.4	13209450W2004260	17.4	13210835F2004260	12
13210980F2004261	128.9	13210824F2004261	30	13210831F2004261	81.1	13209450W2004261	18.1	13210835F2004261	12.5
13210980F2004262	131.2	13210824F2004262	31	13210831F2004262	81.8	13209450W2004262	18.8	13210835F2004262	13
13210980F2004263	133.5	13210824F2004263	32	13210831F2004263	82.5	13209450W2004263	19.5	13210835F2004263	13.5
13210980F2004264	135.8	13210824F2004264	33	13210831F2004264	83.2	13209450W2004264	20.2	13210835F2004264	14
13210980F2004265	136	13210824F2004265	33	13210831F2004265	83	13209450W2004265	20	13210835F2004265	14
13210980F2004266	134.7	13210824F2004266	37	13210831F2004266	83.2	13209450W2004266	20.2	13210835F2004266	13.7
13210980F2004267	133.4	13210824F2004267	37.2	13210831F2004267	83.4	13209450W2004267	20.4	13210835F2004267	13.4
13210980F2004268	132.1	13210824F2004268	37.4	13210831F2004268	83.6	13209450W2004268	20.6	13210835F2004268	13.1
13210980F2004269	130.8	13210824F2004269	37.6	13210831F2004269	83.8	13209450W2004269	20.8	13210835F2004269	12.8

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004270	129.5	13210824F2004270	37.8	13210831F2004270	84	13209450W2004270	21	13210835F2004270	12.5
13210980F2004271	128.2	13210824F2004271	38	13210831F2004271	84.2	13209450W2004271	21.2	13210835F2004271	12.2
13210980F2004272	128	13210824F2004272	37	13210831F2004272	84	13209450W2004272	21	13210835F2004272	12
13210980F2004273	128.5	13210824F2004273	36.8	13210831F2004273	82.8	13209450W2004273	20.3	13210835F2004273	13
13210980F2004274	129	13210824F2004274	36.6	13210831F2004274	81.6	13209450W2004274	19.6	13210835F2004274	14
13210980F2004275	129.5	13210824F2004275	36.4	13210831F2004275	80.4	13209450W2004275	18.9	13210835F2004275	15
13210980F2004276	130	13210824F2004276	36.2	13210831F2004276	79.2	13209450W2004276	18.2	13210835F2004276	16
13210980F2004277	130.5	13210824F2004277	36	13210831F2004277	78	13209450W2004277	17.5	13210835F2004277	17
13210980F2004278	131	13210824F2004278	35.8	13210831F2004278	76.8	13209450W2004278	16.8	13210835F2004278	18
13210980F2004279	129.6	13210824F2004279	35.1	13210831F2004279	76.4	13209450W2004279	16.7	13210835F2004279	16.9
13210980F2004280	128.2	13210824F2004280	34.4	13210831F2004280	76	13209450W2004280	16.6	13210835F2004280	15.8
13210980F2004281	126.8	13210824F2004281	33.7	13210831F2004281	75.6	13209450W2004281	16.5	13210835F2004281	14.7
13210980F2004282	125.4	13210824F2004282	33	13210831F2004282	75.2	13209450W2004282	16.4	13210835F2004282	13.6
13210980F2004283	124	13210824F2004283	32.3	13210831F2004283	74.8	13209450W2004283	16.3	13210835F2004283	12.5
13210980F2004284	122.6	13210824F2004284	31.6	13210831F2004284	74.4	13209450W2004284	16.2	13210835F2004284	11.4
13210980F2004285	121.2	13210824F2004285	30.9	13210831F2004285	74	13209450W2004285	16.1	13210835F2004285	10.3
13210980F2004286	120.6	13210824F2004286	30.3	13210831F2004286	73	13209450W2004286	15.8	13210835F2004286	9.8
13210980F2004287	120	13210824F2004287	29.7	13210831F2004287	72	13209450W2004287	15.5	13210835F2004287	9.3
13210980F2004288	119.4	13210824F2004288	29.1	13210831F2004288	71	13209450W2004288	15.2	13210835F2004288	8.8
13210980F2004289	118.8	13210824F2004289	28.5	13210831F2004289	70	13209450W2004289	14.9	13210835F2004289	8.3
13210980F2004290	118.2	13210824F2004290	27.9	13210831F2004290	69	13209450W2004290	14.6	13210835F2004290	7.8
13210980F2004291	117.6	13210824F2004291	27.3	13210831F2004291	68	13209450W2004291	14.3	13210835F2004291	7.3
13210980F2004292	117	13210824F2004292	26.7	13210831F2004292	67	13209450W2004292	14	13210835F2004292	6.8
13210980F2004293	114.1	13210824F2004293	26.2	13210831F2004293	66.6	13209450W2004293	14.3	13210835F2004293	6.4
13210980F2004294	111.2	13210824F2004294	25.7	13210831F2004294	66.2	13209450W2004294	14.6	13210835F2004294	6
13210980F2004295	108.3	13210824F2004295	25.2	13210831F2004295	65.8	13209450W2004295	14.9	13210835F2004295	5.6
13210980F2004296	105.4	13210824F2004296	24.7	13210831F2004296	65.4	13209450W2004296	15.2	13210835F2004296	5.2
13210980F2004297	102.5	13210824F2004297	24.2	13210831F2004297	65	13209450W2004297	15.5	13210835F2004297	4.8

Mason Drain 2004		N. Middleton 2004		S. Middleton 2004		Thurman 2004		Willow Creek 2004	
SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q	SiteID, Year, Day	Q
13210980F2004298	99.6	13210824F2004298	23.7	13210831F2004298	64.6	13209450W2004298	15.8	13210835F2004298	4.4
13210980F2004299	96.7	13210824F2004299	23.2	13210831F2004299	64.2	13209450W2004299	16.1	13210835F2004299	4
13210980F2004300	96.8	13210824F2004300	23.2	13210831F2004300	64.2	13209450W2004300	16.1	13210835F2004300	4
13210980F2004301	96.9	13210824F2004301	23.2	13210831F2004301	64.2	13209450W2004301	16.1	13210835F2004301	4
13210980F2004302	97	13210824F2004302	23.2	13210831F2004302	64.2	13209450W2004302	16.1	13210835F2004302	4
13210980F2004303	97.1	13210824F2004303	23.2	13210831F2004303	64.2	13209450W2004303	16.1	13210835F2004303	4
13210980F2004304	97.1	13210824F2004304	23.2	13210831F2004304	64.2	13209450W2004304	16.1	13210835F2004304	4
13210980F2004305	97.1	13210824F2004305	23.2	13210831F2004305	64.2	13209450W2004305	16.1	13210835F2004305	4

SiteID = Site Identification number; Q = discharge

Table C-13. Water temperature data (abridged) in degrees Celsius used to create Lower Boise River Mainstem Tributary Temperature Analysis Data Summary and Technical Report, June 2005. Data provided by the City of Boise, January 2009.

Lower Boise River Drain and Tributary Abridged Water Temperature (*C) Data

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/10/2004	0:52	14.94	15.41		14.61	15.49	14.68	15.98	15.88
5/10/2004	1:52	14.94	15.56		14.3	15.34	14.05	15.67	15.72
5/10/2004	2:52	14.94	15.56		13.99	15.02	13.59	15.36	15.41
5/10/2004	3:52	14.79	15.56		13.68	14.7	13.28	15.04	15.09
5/10/2004	4:52	14.79	15.56		13.53	14.38	12.97	14.72	14.77
5/10/2004	5:52	14.79	15.41		13.22	14.07	12.66	14.41	14.3
5/10/2004	6:52	14.63	15.41		13.07	13.76	12.35	14.1	14.14
5/10/2004	7:52	14.47	15.24		12.76	13.61	12.2	13.79	13.84
5/10/2004	8:52	14.47	15.24		12.6	13.3	11.89	13.48	13.53
5/10/2004	9:52	14.32	15.08		12.44	13.14	11.73	13.33	13.38
5/10/2004	10:52	14.32	14.93		12.44	12.99	11.73	13.33	13.38
5/10/2004	11:52	14.16	14.77		12.76	12.83	11.89	13.33	13.22
5/10/2004	12:52	14.01	14.61		12.91	12.83	12.2	13.33	13.38
5/10/2004	13:52	14.01	14.45		13.07	12.83	12.35	13.33	13.22
5/10/2004	14:52	13.85	14.29		12.91	12.83	12.35	13.33	13.38
5/10/2004	15:52	13.85	14.14		12.91	12.83	12.35	13.33	13.38
5/10/2004	16:52	13.7	13.98		12.91	12.83	12.51	13.33	13.38
5/10/2004	17:52	13.7	13.98		12.91	12.83	12.51	13.33	13.38
5/10/2004	18:52	13.7	13.83		12.91	12.83	12.51	13.33	13.22
5/10/2004	19:52	13.54	13.83		12.76	12.83	12.35	13.18	13.07
5/10/2004	20:52	13.54	13.83		12.6	12.68	12.2	13.02	12.92
5/10/2004	21:52	13.54	13.67		12.44	12.68	11.89	12.87	12.76
5/10/2004	22:52	13.54	13.67		12.13	12.52	11.58	12.71	12.61
5/10/2004	23:52	13.39	13.52		11.98	12.37	11.42	12.56	12.45
5/11/2004	0:52	13.39	13.37		11.82	12.06	11.11	12.24	12.29
5/11/2004	1:52	13.39	13.21		11.67	11.9	10.96	12.09	12.14
5/11/2004	2:52	13.24	13.06		11.51	11.74	10.65	11.93	11.83
5/11/2004	3:52	13.24	12.9		11.36	10.51	10.49	11.78	11.68
5/11/2004	4:52	13.08	12.74		11.21	10.35	10.34	11.62	11.52

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/11/2004	5:52	13.08	12.59		11.05	10.19	10.18	11.31	11.37
5/11/2004	6:52	12.93	12.43		10.89	10.19	10.03	11.16	11.22
5/11/2004	7:52	12.93	12.28		10.74	10.04	9.87	11.01	11.06
5/11/2004	8:52	12.77	12.12		10.74	9.88	9.87	11.01	10.91
5/11/2004	9:52	12.77	12.12		10.74	9.88	9.72	11.01	10.91
5/11/2004	10:52	12.62	11.97		10.89	9.88	9.87	11.16	11.06
5/11/2004	11:52	12.62	11.81		11.05	10.04	10.03	11.31	11.37
5/11/2004	12:52	12.46	11.66		11.36	10.51	10.49	11.62	11.68
5/11/2004	13:52	12.46	11.66		11.82	10.97	10.96	11.93	11.98
5/11/2004	14:52	12.31	11.66		11.98	11.43	11.42	12.4	12.45
5/11/2004	15:52	12.31	11.66		12.44	11.9	11.89	12.71	12.76
5/11/2004	16:52	12.31	11.66		13.07	12.37	12.51	13.18	13.07
5/11/2004	17:52	12.31	11.81		13.22	12.83	12.82	13.33	13.38
5/11/2004	18:52	12.31	11.97		13.37	13.14	13.13	13.48	13.53
5/11/2004	19:52	12.31	12.12		13.37	13.3	13.28	13.48	13.53
5/11/2004	20:52	12.31	12.28		13.37	13.3	13.28	13.48	13.38
5/11/2004	21:52	12.31	12.59		13.22	13.14	13.13	13.33	13.38
5/11/2004	22:52	12.31	12.74		12.91	12.83	12.82	13.18	13.22
5/11/2004	23:52	12.46	12.9		12.6	12.52	12.51	13.18	13.07
5/12/2004	0:52	12.46	12.9		12.44	12.21	12.04	12.87	12.92
5/12/2004	1:52	12.46	12.9		12.13	11.74	11.73	12.71	12.76
5/12/2004	2:52	12.46	12.9		11.98	11.43	11.42	12.56	12.45
5/12/2004	3:52	12.62	12.9		11.82	11.13	11.11	12.24	12.29
5/12/2004	4:52	12.62	12.74		11.51	10.97	10.81	12.09	12.14
5/12/2004	5:52	12.62	12.74		11.36	10.66	10.65	11.78	11.83
5/12/2004	6:52	12.62	12.74		11.21	10.51	10.49	11.62	11.68
5/12/2004	7:52	12.62	12.59		11.05	10.35	10.18	11.47	11.52
5/12/2004	8:52	12.62	12.59		10.89	10.19	10.18	11.31	11.37
5/12/2004	9:52	12.62	12.43		10.89	10.04	10.03	11.31	11.37
5/12/2004	10:52	12.46	12.43		10.89	10.19	10.03	11.31	11.37
5/12/2004	11:52	12.46	12.28		11.05	10.35	10.34	11.47	11.52
5/12/2004	12:52	12.46	12.28		11.36	10.51	10.49	11.93	11.83

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/12/2004	13:52	12.31	12.12		12.13	11.28	11.42	12.24	12.29
5/12/2004	14:52	12.31	12.12		12.76	12.06	12.2	12.71	12.61
5/12/2004	15:52	12.31	11.97		13.07	12.68	12.82	12.71	12.76
5/12/2004	16:52	12.31	11.97		13.37	13.14	13.28	13.18	13.22
5/12/2004	17:52	12.31	12.12		13.99	13.61	13.89	13.79	13.84
5/12/2004	18:52	12.15	12.12		14.3	14.07	14.21	13.94	13.84
5/12/2004	19:52	12.31	12.12		14.3	14.23	14.36	14.1	13.99
5/12/2004	20:52	12.31	12.28		14.14	14.23	14.21	14.1	14.14
5/12/2004	21:52	12.31	12.43		13.83	13.92	13.89	14.1	13.99
5/12/2004	22:52	12.46	12.43		13.53	13.46	13.28	13.94	13.84
5/12/2004	23:52	12.46	12.59		13.22	12.99	12.97	13.63	13.68
5/13/2004	0:52	12.62	12.74		12.91	12.68	12.51	13.33	13.38
5/13/2004	1:52	12.77	12.9		12.6	12.37	12.04	13.18	13.07
5/13/2004	2:52	12.77	12.9		12.13	11.9	11.58	12.71	12.76
5/13/2004	3:52	12.77	12.9		11.82	11.43	11.27	12.4	12.45
5/13/2004	4:52	12.77	12.9		11.51	11.13	10.81	12.09	11.98
5/13/2004	5:52	12.77	12.74		11.21	10.66	10.49	11.62	11.68
5/13/2004	6:52	12.77	12.74		10.89	10.35	10.03	11.31	11.37
5/13/2004	7:52	12.77	12.59		10.58	10.04	9.72	11.01	11.06
5/13/2004	8:52	12.77	12.59		10.43	9.72	9.41	10.85	10.91
5/13/2004	9:52	12.62	12.43		10.43	9.72	9.41	10.85	10.91
5/13/2004	10:52	12.62	12.12		10.74	9.88	9.72	11.16	11.22
5/13/2004	11:52	12.46	11.97		11.21	10.19	10.18	11.62	11.52
5/13/2004	12:52	12.46	11.81		11.98	10.97	10.96	12.24	12.14
5/13/2004	13:52	12.31	11.66		12.76	11.9	12.04	12.87	12.92
5/13/2004	14:52	12.31	11.66		13.68	12.83	12.97	13.63	13.68
5/13/2004	15:52	12.15	11.66		14.46	13.92	14.05	14.41	14.3
5/13/2004	16:52	12.15	11.66		15.24	14.7	14.99	15.04	15.09
5/13/2004	17:52	12.15	11.66		15.72	15.34	15.47	15.67	15.57
5/13/2004	18:52	12.15	11.81		15.88	15.66	15.78	15.98	15.88
5/13/2004	19:52	12.15	12.12		15.88	15.97	16.1	15.98	15.88
5/13/2004	20:52	12.31	12.43		15.72	15.97	16.1	15.98	15.88

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/13/2004	21:52	12.46	12.59		15.56	15.81	15.78	15.83	15.88
5/13/2004	22:52	12.62	12.74		15.24	15.49	15.47	15.67	15.57
5/13/2004	23:52	12.77	13.06		14.77	14.86	14.83	15.36	15.41
5/15/2004	11:52	13.7	14.14		13.07	12.37	12.2	13.48	13.38
5/15/2004	12:52	13.54	13.98		13.37	12.83	12.82	13.63	13.68
5/15/2004	13:52	13.54	13.83		13.68	13.14	13.13	13.94	13.84
5/15/2004	14:52	13.39	13.67		13.83	13.46	13.43	14.1	13.99
5/15/2004	15:52	13.39	13.52		13.99	13.76	13.74	14.26	14.14
5/15/2004	16:52	13.39	13.52		14.14	14.07	14.05	14.41	14.3
5/15/2004	17:52	13.24	13.37		14.14	14.07	14.05	14.41	14.46
5/15/2004	18:52	13.24	13.37		14.14	14.23	14.21	14.57	14.61
5/15/2004	19:52	13.24	13.37		14.14	14.07	14.05	14.57	14.46
5/15/2004	20:52	13.24	13.37		13.99	14.07	14.05	14.57	14.46
5/15/2004	21:52	13.24	13.37		13.83	13.92	13.74	14.41	14.3
5/15/2004	22:52	13.24	13.37		13.68	13.61	13.59	14.26	14.3
5/15/2004	23:52	13.24	13.37		13.53	13.3	13.28	14.1	14.14
5/16/2004	0:52	13.24	13.37		13.37	12.99	12.97	13.94	13.99
5/16/2004	1:52	13.39	13.52		13.07	12.83	12.66	13.79	13.68
5/16/2004	2:52	13.39	13.52		12.91	12.52	12.51	13.48	13.53
5/16/2004	3:52	13.39	13.52		12.76	12.37	12.35	13.33	13.38
5/16/2004	4:52	13.24	13.52		12.44	12.06	12.04	13.02	13.07
5/16/2004	5:52	13.24	13.52		12.13	11.74	11.73	12.71	12.76
5/16/2004	6:52	13.24	13.37		11.82	11.43	11.42	12.56	12.61
5/16/2004	7:52	13.24	13.37		11.67	11.28	11.27	12.4	12.29
5/16/2004	8:52	13.08	13.21		11.67	11.28	11.11	12.24	12.14
5/16/2004	9:52	13.08	13.21		11.82	11.28	11.27	12.24	12.14
5/16/2004	10:52	12.93	13.21		12.44	11.59	11.58	12.4	12.45
5/16/2004	11:52	12.93	13.21		12.76	12.06	12.04	12.71	12.76
5/16/2004	12:52	12.93	13.06		13.37	12.68	12.66	13.18	13.22
5/16/2004	13:52	12.77	13.06		14.3	13.61	13.59	13.79	13.68
5/16/2004	14:52	12.77	12.9		14.93	14.38	14.36	14.41	14.3
5/16/2004	15:52	12.77	12.74		15.56	15.18	14.99	14.88	14.93

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/16/2004	16:52	12.77	12.74		16.03	15.66	15.63	15.51	15.57
5/16/2004	17:52	12.77	12.74		16.35	16.13	16.1	15.98	15.88
5/16/2004	18:52	12.77	12.9		16.51	16.44	16.42	16.3	16.2
5/16/2004	19:52	12.93	12.9		16.51	16.44	16.42	16.3	16.36
5/16/2004	20:52	12.93	13.06		16.19	16.29	16.26	16.3	16.36
5/16/2004	21:52	13.08	13.21		15.88	15.81	15.78	16.3	16.2
5/16/2004	22:52	13.24	13.37		15.4	15.49	15.31	16.14	16.04
5/16/2004	23:52	13.39	13.52		15.08	14.86	14.83	15.83	15.88
5/17/2004	0:52	13.39	13.67		14.61	14.38	14.21	15.51	15.57
5/17/2004	1:52	13.54	13.83		14.14	13.76	13.74	15.19	15.25
5/17/2004	2:52	13.54	13.83		13.83	13.3	13.28	14.88	14.77
5/17/2004	3:52	13.7	13.98		13.37	12.99	12.97	14.41	14.46
5/17/2004	4:52	13.7	13.98		13.07	12.52	12.51	14.1	14.14
5/17/2004	5:52	13.7	14.14		12.76	12.21	12.04	13.79	13.68
5/17/2004	6:52	13.7	14.14		12.44	11.74	11.73	13.33	13.38
5/17/2004	7:52	13.7	13.98		12.13	11.43	11.42	13.02	13.07
5/17/2004	8:52	13.7	13.98		12.13	11.43	11.42	12.87	12.92
5/17/2004	9:52	13.54	13.98		12.29	11.43	11.42	12.87	12.76
5/17/2004	10:52	13.54	13.83		12.6	11.74	11.73	13.02	12.92
5/17/2004	11:52	13.54	13.83		13.37	12.37	12.35	13.33	13.38
5/17/2004	12:52	13.39	13.67		13.99	12.99	13.13	13.94	13.84
5/17/2004	13:52	13.39	13.67		14.61	13.76	13.74	14.57	14.46
5/17/2004	14:52	13.24	13.52		14.93	14.38	14.36	14.88	14.93
5/17/2004	15:52	13.24	13.52		15.08	14.86	14.99	15.19	15.25
5/17/2004	16:52	13.24	13.52		15.56	15.49	15.47	15.67	15.57
5/17/2004	17:52	13.24	13.37		15.56	15.81	15.63	15.67	15.72
5/17/2004	18:52	13.24	13.52		15.56	15.81	15.63	15.83	15.72
5/17/2004	19:52	13.39	13.52		15.4	15.49	15.47	15.83	15.72
5/17/2004	20:52	13.39	13.52		15.24	15.34	15.31	15.67	15.72
5/17/2004	21:52	13.54	13.67		15.08	15.02	14.99	15.67	15.57
5/17/2004	22:52	13.54	13.67		14.77	14.54	14.52	15.36	15.41
5/17/2004	23:52	13.7	13.83		14.46	14.07	14.05	15.19	15.25

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/18/2004	0:52	13.7	13.83		14.14	13.76	13.74	15.04	14.93
5/18/2004	1:52	13.85	13.98		13.99	13.46	13.43	14.72	14.77
5/18/2004	2:52	13.85	13.98		13.68	13.14	13.13	14.41	14.46
5/18/2004	3:52	13.85	13.98		13.53	12.99	12.82	14.26	14.3
5/18/2004	4:52	13.85	14.14		13.37	12.68	12.66	14.1	13.99
5/18/2004	5:52	13.85	14.14		13.07	12.52	12.51	13.79	13.84
5/18/2004	6:52	13.85	14.14		12.91	12.37	12.35	13.63	13.68
5/18/2004	7:52	13.85	14.14		12.76	12.21	12.2	13.48	13.38
5/18/2004	8:52	13.85	14.14		12.76	12.21	12.2	13.33	13.38
5/18/2004	9:52	13.85	14.14		12.76	12.21	12.2	13.18	13.22
5/18/2004	10:52	13.7	13.98		12.91	12.37	12.35	13.33	13.22
5/18/2004	11:52	13.7	13.98		13.07	12.52	12.51	13.33	13.22
5/18/2004	12:52	13.7	13.98		13.53	12.99	12.97	13.63	13.68
5/18/2004	13:52	13.7	13.98		14.14	13.46	13.43	14.1	13.99
5/18/2004	14:52	13.54	13.83		14.61	14.07	14.05	14.41	14.46
5/18/2004	15:52	13.54	13.83		14.77	14.23	14.21	14.72	14.77
5/18/2004	16:52	13.54	13.67		14.93	14.38	14.36	15.04	14.93
5/18/2004	17:52	13.54	13.67		14.93	14.23	14.21	15.04	15.09
5/18/2004	18:52	13.54	13.83		14.93	14.23	14.21	15.19	15.09
5/18/2004	19:52	13.54	13.83		14.93	14.07	14.05	15.19	15.09
5/18/2004	20:52	13.54	13.83		14.77	13.76	13.74	15.04	15.09
5/18/2004	21:52	13.7	13.83		14.46	13.46	13.43	14.88	14.93
5/18/2004	22:52	13.7	13.83		14.3	13.14	13.13	14.72	14.61
5/18/2004	23:52	13.7	13.98		13.99	12.99	12.82	14.57	14.46
5/19/2004	0:52	13.7	13.98		13.68	12.68	12.66	14.26	14.3
5/19/2004	1:52	13.7	13.98		13.37	12.52	12.51	14.1	13.99
5/19/2004	2:52	13.7	13.98		13.22	12.37	12.35	13.79	13.84
5/19/2004	3:52	13.7	14.14		13.07	12.21	12.2	13.48	13.53
5/27/2004	5:52	14.63	14.77		13.83	13.3	13.13	14.72	14.61
5/27/2004	6:52	14.63	14.77		13.68	13.14	12.97	14.41	14.46
5/27/2004	7:52	14.63	14.77		13.68	12.99	12.82	14.26	14.3
5/27/2004	8:52	14.63	14.77		13.68	12.99	12.82	14.26	14.3

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/27/2004	9:52	14.63	14.77		13.99	13.14	13.13	14.41	14.3
5/27/2004	10:52	14.47	14.77		14.3	13.3	13.43	14.57	14.61
5/27/2004	11:52	14.47	14.77		14.61	13.76	13.74	14.88	14.77
5/27/2004	12:52	14.47	14.77		15.24	14.38	14.52	15.36	15.25
5/27/2004	13:52	14.32	14.77		15.24	14.7	14.83	15.36	15.41
5/27/2004	14:52	14.32	14.77		15.24	15.18	15.15	15.67	15.57
5/27/2004	15:52	14.32	14.77		15.24	15.34	15.47	15.67	15.72
5/27/2004	16:52	14.32	14.77		15.4	15.49	15.47	15.67	15.72
5/27/2004	17:52	14.32	14.77		15.4	15.49	15.63	15.83	15.88
5/27/2004	18:52	14.32	14.77		15.4	15.49	15.47	15.98	15.88
5/27/2004	19:52	14.32	14.77		15.56	15.34	15.31	15.98	16.04
5/27/2004	20:52	14.32	14.77		15.4	15.18	15.15	15.98	16.04
5/27/2004	21:52	14.32	14.77		15.24	15.02	14.83	15.83	15.88
5/27/2004	22:52	14.32	14.77		15.08	14.86	14.68	15.67	15.88
5/27/2004	23:52	14.32	14.77		14.93	14.54	14.52	15.67	15.57
5/28/2004	0:52	14.32	14.61		14.77	14.23	14.21	15.36	15.41
5/28/2004	1:52	14.32	14.61		14.61	14.07	14.05	15.19	15.25
5/28/2004	2:52	14.32	14.61		14.3	13.92	13.74	15.04	14.93
5/28/2004	3:52	14.32	14.61		14.14	13.76	13.59	14.72	14.77
5/28/2004	4:52	14.32	14.61		13.99	13.61	13.59	14.57	14.61
5/28/2004	5:52	14.32	14.61		13.83	13.61	13.43	14.41	14.46
5/28/2004	6:52	14.32	14.61		13.83	13.46	13.43	14.26	14.3
5/28/2004	7:52	14.32	14.61		13.68	13.3	13.28	14.1	14.14
5/28/2004	8:52	14.32	14.45		13.53	13.3	13.28	13.94	13.99
5/28/2004	9:52	14.32	14.61		13.53	13.14	13.13	13.94	13.84
5/28/2004	10:52	14.32	14.61		13.37	12.99	12.97	13.79	13.84
5/28/2004	11:52	14.32	14.61		13.83	13.3	13.28	13.94	13.99
5/28/2004	12:52	14.16	14.61		13.99	13.46	13.43	14.1	14.14
5/28/2004	13:52	14.16	14.61		14.3	13.92	13.74	14.41	14.46
5/28/2004	14:52	14.16	14.61		14.77	14.38	14.36	14.72	14.77
5/28/2004	15:52	14.16	14.61		14.61	14.38	14.36	14.72	14.77
5/28/2004	16:52	14.16	14.61		15.08	14.86	14.83	15.04	15.09

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
5/28/2004	17:52	14.16	14.61		15.24	15.02	14.99	15.36	15.25
5/28/2004	18:52	14.16	14.45		15.24	15.02	14.99	15.36	15.41
5/28/2004	19:52	14.01	14.45		15.24	14.86	14.83	15.36	15.41
5/28/2004	20:52	14.16	14.29		15.08	14.7	14.68	15.36	15.25
5/28/2004	21:52	14.16	14.14		14.77	14.54	14.36	15.19	15.09
5/28/2004	22:52	14.16	14.14		14.61	14.23	14.21	14.88	14.93
5/28/2004	23:52	14.16	13.98		14.3	13.92	13.89	14.57	14.61
5/29/2004	0:52	14.16	13.83		13.99	13.61	13.59	14.26	14.3
5/29/2004	1:52	14.16	13.67		13.68	13.3	13.13	14.1	13.99
5/29/2004	2:52	14.16	13.67		13.37	12.83	12.82	13.79	13.84
5/29/2004	3:52	14.16	13.52		13.07	12.52	12.51	13.48	13.53
5/29/2004	4:52	14.16	13.52		12.76	12.21	12.2	13.18	13.22
5/29/2004	5:52	14.16	13.52		12.44	11.74	11.73	13.02	12.92
5/29/2004	6:52	14.16	13.52		12.13	11.43	11.42	12.71	12.76
5/29/2004	7:52	14.01	13.52		11.98	11.28	11.27	12.56	12.45
5/29/2004	8:52	14.01	13.52		11.98	11.28	11.27	12.4	12.29
5/29/2004	9:52	13.85	13.52		12.13	11.43	11.27	12.4	12.29
5/29/2004	10:52	13.85	13.52		12.29	11.59	11.58	12.56	12.45
5/29/2004	11:52	13.85	13.52		12.76	12.06	12.04	12.87	12.76
6/29/2004	10:52	19.92	21.22	18.33	18.59	18.05	18.01	18.54	18.59
6/29/2004	11:52	20.08	20.72	18.82	19.08	18.7	18.66	18.87	18.91
6/29/2004	12:52	20.4	20.23	19.31	19.73	19.51	19.47	19.35	19.39
6/29/2004	13:52	20.73	19.91	19.96	20.22	20.32	20.28	19.83	19.88
6/29/2004	14:52	21.22	19.58	20.44	20.71	21.31	21.26	20.48	20.53
6/29/2004	15:52	21.89	19.09	20.77	20.71	21.81	21.76	21.14	21.18
6/29/2004	16:52	22.39	18.77	20.77	20.38	22.14	22.09	21.31	21.35
6/29/2004	17:52	22.72	18.44	20.44	20.06	21.81	21.76	21.14	21.02
6/29/2004	18:52	22.72	18.12	20.12	20.06	21.48	21.42	20.98	20.86
6/29/2004	19:52	22.39	17.79	19.96	19.73	20.98	20.93	20.64	20.69
6/29/2004	20:52	21.89	18.12	19.63	19.41	20.48	20.44	20.32	20.37
6/29/2004	21:52	21.56	18.44	19.31	19.24	19.83	19.79	19.99	20.04
6/29/2004	22:52	21.22	18.93	19.14	18.92	19.34	19.31	19.67	19.72

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
6/29/2004	23:52	20.73	19.58	18.82	18.59	18.86	18.82	19.35	19.39
6/30/2004	0:52	20.4	20.39	18.49	18.43	18.37	18.33	19.03	19.07
6/30/2004	1:52	19.92	21.55	18.33	18.11	17.89	17.85	18.71	18.75
6/30/2004	2:52	19.76	22.39	18.01	17.79	17.41	17.37	18.38	18.43
6/30/2004	3:52	19.27	23.23	17.69	17.47	17.08	17.05	18.06	18.11
6/30/2004	4:52	19.11	23.92	17.37	17.15	16.61	16.57	17.74	17.78
6/30/2004	5:52	18.62	24.27	17.06	16.83	16.29	16.26	17.58	17.46
6/30/2004	6:52	18.29	23.74	16.74	16.51	15.97	15.94	17.26	17.31
6/30/2004	7:52	18.29	23.23	16.58	16.51	15.81	15.78	17.09	16.99
6/30/2004	8:52	18.46	22.72	16.58	16.67	15.81	15.78	16.94	16.99
6/30/2004	9:52	18.62	22.22	16.58	16.83	15.97	15.94	16.94	16.99
6/30/2004	10:52	18.94	21.88	16.89	17.31	16.29	16.26	17.26	17.14
6/30/2004	11:52	19.59	21.55	17.37	17.79	17.08	17.05	17.58	17.62
6/30/2004	12:52	20.56	20.23	17.85	18.27	17.73	17.85	18.06	18.11
7/19/2004	11:52		21.38	19.14	19.57	18.86	18.82	19.19	19.07
7/19/2004	12:52	21.72	22.39	19.63	20.06	19.67	19.63	19.67	19.56
7/19/2004	13:52	22.72	23.4	20.12	20.22	20.65	20.6	20.32	20.21
7/19/2004	14:52	23.73	24.44	20.44	20.71	21.31	21.26	20.64	20.69
7/19/2004	15:52	24.6	24.96	20.77	21.03	21.98	21.92	21.14	21.18
7/19/2004	16:52	25.12	25.48	21.09	21.36	22.65	22.59	21.81	21.68
7/19/2004	17:52	25.47	25.83	21.26	21.19	23.16	23.09	22.14	22.01
7/19/2004	18:52	25.82	24.96	21.26	21.19	22.98	22.93	21.98	22.01
7/19/2004	19:52	24.95	24.27	21.09	21.03	22.65	22.76	21.98	22.01
7/19/2004	20:52	24.26	23.74	21.09	20.87	22.31	22.42	21.81	21.84
7/19/2004	21:52	23.73	23.4	20.77	20.71	21.98	21.92	21.64	21.68
7/19/2004	22:52	23.22	22.89	20.77	20.54	21.48	21.42	21.48	21.35
7/19/2004	23:52	22.89	22.56	20.44	20.22	21.14	21.09	21.14	21.18
7/20/2004	0:52	22.56	22.22	20.28	20.06	20.65	20.6	20.98	20.86
7/20/2004	1:52	22.22	21.88	19.96	19.89	20.32	20.28	20.64	20.69
7/20/2004	2:52	21.89	21.72	19.79	19.57	19.99	19.96	20.48	20.37
7/20/2004	3:52	21.56	21.38	19.63	19.24	19.67	19.63	20.16	20.21
7/20/2004	4:52	21.22	21.05	19.31	19.08	19.51	19.47	19.99	20.04

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
7/20/2004	5:52	20.89	20.56	19.14	18.92	19.18	19.14	19.83	19.72
7/20/2004	6:52	20.56	20.23	18.82	18.76	18.86	18.82	19.51	19.56
7/20/2004	7:52	20.24	20.07	18.82	18.76	18.7	18.66	19.35	19.39
7/20/2004	8:52	20.08	19.91	18.66	18.76	18.7	18.66	19.35	19.23
7/20/2004	9:52	19.92	20.23	18.82	19.08	18.7	18.66	19.35	19.39
7/20/2004	10:52	20.24	20.72	19.14	19.57	19.02	18.98	19.51	19.56
7/20/2004	11:52	21.06	21.72	19.63	20.06	19.51	19.47	19.83	19.72
8/16/2004	11:52	22.08	20.38	19.96	19.56	20.13	20.23	20.48	20.38
8/16/2004	12:52	22.58	20.71	20.12	19.56	20.45	20.39	20.81	20.71
8/16/2004	13:52	22.75	20.87	20.28	19.56	20.78	20.88	21.14	20.87
8/16/2004	14:52	22.75	21.2	20.6	19.56	21.28	21.21	21.31	21.2
8/16/2004	15:52	22.92	21.37	20.77	19.56	21.61	21.54	21.48	21.37
8/16/2004	16:52	23.26	21.71	20.93	19.72	21.78	21.88	21.64	21.71
8/16/2004	17:52	23.26	21.87	20.93	19.72	22.11	22.04	21.98	21.87
8/16/2004	18:52	23.42	22.04	20.93	19.88	22.28	22.21	21.98	22.04
8/16/2004	19:52	23.26	21.87	20.77	19.88	22.28	22.21	21.81	21.87
8/16/2004	20:52	23.08	21.71	20.77	20.04	21.94	21.88	21.64	21.71
8/16/2004	21:52	22.75	21.37	20.6	20.04	21.61	21.71	21.48	21.37
8/16/2004	22:52	22.42	21.2	20.44	20.04	21.28	21.38	21.31	21.2
8/16/2004	23:52	22.08	21.03	20.12	20.04	20.94	21.04	21.14	21.03
8/17/2004	0:52	21.92	21.03	20.12	20.04	20.78	20.72	20.98	21.03
8/17/2004	1:52	21.92	20.87	19.96	20.04	20.45	20.55	20.81	20.87
8/17/2004	2:52	21.75	20.54	19.79	20.04	20.29	20.23	20.48	20.54
8/17/2004	3:52	21.75	20.38	19.63	19.88	19.97	19.91	20.48	20.38
8/17/2004	4:52	21.41	20.22	19.63	19.88	19.64	19.74	20.32	20.22
8/17/2004	5:52	21.24	20.06	19.47	19.88	19.48	19.42	20.16	20.06
8/17/2004	6:52	21.08	19.9	19.31	19.72	19.32	19.42	19.99	19.9
8/17/2004	7:52	21.08	19.9	19.14	19.72	19.16	19.26	19.83	19.9
8/17/2004	8:52	20.91	19.74	19.14	19.56	19.16	19.09	19.67	19.74
8/17/2004	9:52	20.91	19.74	18.98	19.56	18.99	19.09	19.67	19.74
8/17/2004	10:52	20.74	19.74	18.98	19.39	18.99	19.09	19.67	19.74
8/17/2004	11:52	20.91	19.58	18.98	19.39	19.16	19.09	19.67	19.58

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
8/17/2004	12:52	20.91	19.74	18.98	19.39	19.16	19.09	19.83	19.74
8/17/2004	13:52	21.08	20.06	19.47	19.23	19.48	19.42	20.16	20.06
8/17/2004	14:52	21.75	20.22	19.79	19.23	19.97	19.91	20.32	20.22
8/17/2004	15:52	22.42	20.71	20.28	19.23	20.45	20.39	20.81	20.71
8/17/2004	16:52	22.58	20.87	20.6	19.23	20.94	20.88	21.14	20.87
8/17/2004	17:52	22.92	21.2	20.77	19.39	21.11	21.21	21.31	21.2
8/17/2004	18:52	23.08	21.2	20.77	19.56	21.28	21.38	21.31	21.2
8/17/2004	19:52	22.92	21.2	20.77	19.56	21.44	21.38	21.31	21.2
8/17/2004	20:52	22.75	21.2	20.6	19.72	21.44	21.38	21.14	21.2
8/17/2004	21:52	22.42	20.87	20.28	19.72	21.28	21.38	20.98	20.87
8/17/2004	22:52	22.25	20.87	20.12	19.88	21.11	21.04	20.81	20.87
8/17/2004	23:52	22.08	20.54	20.12	19.88	20.94	20.88	20.64	20.54
8/22/2004	6:52	20.58	20.06	18.82	19.56	18.99	18.93	19.99	20.06
8/22/2004	7:52	20.42	19.74	18.66	19.56	18.67	18.77	19.83	19.74
8/22/2004	8:52	20.26	19.58	18.66	19.39	18.51	18.6	19.67	19.58
8/22/2004	9:52	20.09	19.58	18.66	19.39	18.51	18.6	19.51	19.58
8/22/2004	10:52	20.09	19.42	18.66	19.23	18.51	18.44	19.51	19.42
8/22/2004	11:52	20.26	19.42	18.66	19.23	18.67	18.6	19.51	19.42
8/22/2004	12:52	20.42	19.58	18.82	19.23	18.67	18.77	19.51	19.58
8/22/2004	13:52	20.58	19.58	18.82	19.06	18.83	18.93	19.67	19.58
8/22/2004	14:52	20.58	19.74	18.98	19.06	18.99	19.09	19.67	19.74
8/22/2004	15:52	20.42	19.58	18.82	19.06	19.16	19.09	19.67	19.58
8/22/2004	16:52	20.26	19.58	18.82	19.06	19.16	19.09	19.67	19.58
8/22/2004	17:52	20.09	19.42	18.49	19.06	18.99	18.93	19.51	19.42
8/22/2004	18:52	20.09	19.42	18.49	19.06	18.99	18.93	19.51	19.42
8/22/2004	19:52	19.77	19.26	18.33	18.9	18.67	18.6	19.35	19.26
8/22/2004	20:52	19.61	19.09	18.17	18.9	18.51	18.44	19.19	19.09
8/22/2004	21:52	19.29	18.93	17.85	18.9	18.34	18.28	18.87	18.93
8/22/2004	22:52	19.13	18.77	17.85	18.74	18.02	17.96	18.71	18.77
8/22/2004	23:52	18.97	18.45	17.69	18.74	17.86	17.79	18.54	18.45
8/23/2004	0:52	18.97	18.29	17.53	18.74	17.54	17.63	18.38	18.29
8/23/2004	1:52	18.97	18.13	17.37	18.57	17.38	17.48	18.22	18.13

Day	Time	Willow up	Willow dn	Mill up	Mill dn	Fifteenmile up	Fifteenmile dn	Caldwell dn	Caldwell up
8/23/2004	2:52	18.64	17.97	17.21	18.57	17.22	17.16	18.06	17.97
8/23/2004	3:52	18.48	17.81	17.06	18.41	17.06	17	17.9	17.81
8/23/2004	4:52	18.32	17.64	16.89	18.41	16.9	16.84	17.58	17.64
8/23/2004	5:52	18.16	17.48	16.89	18.25	16.74	16.68	17.42	17.48
8/23/2004	6:52	17.99	17.33	16.74	18.09	16.58	16.52	17.26	17.33
8/23/2004	7:52	17.83	17.17	16.58	18.09	16.42	16.37	17.09	17.17
8/23/2004	8:52	17.83	17.01	16.58	17.93	16.27	16.37	17.09	17.01
8/23/2004	9:52	17.83	17.01	16.58	17.77	16.42	16.37	17.09	17.01
8/23/2004	10:52	18.16	17.01	16.74	17.77	16.58	16.68	17.09	17.01
8/23/2004	11:52	18.64	17.33	17.06	17.77	17.06	17	17.58	17.33

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/10/2004	0:52	15.98	15.88	15.71	15.68	16.88	16.91	14.81	13.01	14.63	14.62
5/10/2004	1:52	15.82	15.72	15.39	15.36	16.4	16.43	14.49	12.7	14.32	14.3
5/10/2004	2:52	15.5	15.56	15.07	15.04	15.92	15.96	14.18	12.54	14.01	13.99
5/10/2004	3:52	15.34	15.41	14.74	14.73	15.45	15.49	13.87	12.39	13.71	13.83
5/10/2004	4:52	15.18	15.24	14.43	14.41	15.13	15.01	13.41	12.54	13.4	13.53
5/10/2004	5:52	15.03	14.92	14.12	14.26	14.66	14.69	13.1	12.54	13.24	13.37
5/10/2004	6:52	14.71	14.77	13.96	13.94	14.34	14.38	12.94	12.7	13.09	13.06
5/10/2004	7:52	14.56	14.45	13.66	13.79	14.03	13.92	12.63	12.7	12.78	12.91
5/10/2004	8:52	14.24	14.29	13.5	13.48	13.72	13.76	12.48	12.86	12.63	12.75
5/10/2004	9:52	14.24	14.14	13.34	13.33	13.42	13.46	12.32	12.86	12.63	12.59
5/10/2004	10:52	14.24	14.14	13.34	13.33	13.26	13.3	12.32	12.7	12.78	12.75
5/10/2004	11:52	14.08	13.98	13.34	13.33	13.26	13.3	12.48	12.7	12.78	12.75
5/10/2004	12:52	13.93	13.83	13.34	13.33	13.26	13.3	12.63	12.7	12.94	12.91
5/10/2004	13:52	13.93	13.83	13.34	13.33	13.26	13.46	12.79	12.54	12.94	12.91
5/10/2004	14:52	13.77	13.83	13.34	13.33	13.42	13.46	12.79	12.39	12.94	12.91
5/10/2004	15:52	13.77	13.83	13.34	13.48	13.57	13.61	12.79	12.08	13.09	13.06
5/10/2004	16:52	13.77	13.68	13.34	13.48	13.57	13.61	12.79	11.92	13.24	13.22
5/10/2004	17:52	13.62	13.52	13.34	13.48	13.57	13.61	12.63	11.61	13.4	13.37
5/10/2004	18:52	13.46	13.37	13.34	13.33	13.57	13.61	12.63	11.46	13.24	13.22

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/10/2004	19:52	13.31	13.37	13.34	13.18	13.42	13.46	12.63	11.31	13.09	13.06
5/10/2004	20:52	13.15	13.06	13.19	13.18	13.26	13.3	12.32	11.15	12.94	12.91
5/10/2004	21:52	12.84	12.91	12.88	13.02	12.95	12.99	12.17	10.84	12.63	12.75
5/10/2004	22:52	12.84	12.75	12.72	12.87	12.79	12.84	11.86	10.69	12.47	12.44
5/10/2004	23:52	12.68	12.59	12.57	12.56	12.64	12.53	11.71	10.53	12.32	12.28
5/11/2004	0:52	12.53	12.44	12.41	12.4	12.33	12.22	11.39	10.53	12.16	12.28
5/11/2004	1:52	12.37	12.28	12.25	12.25	12.02	12.06	11.24	10.38	12.01	12.13
5/11/2004	2:52	12.22	12.13	12.09	12.09	11.86	11.75	11.08	10.38	11.86	11.82
5/11/2004	3:52	12.22	12.13	11.78	11.94	11.71	11.59	10.93	10.38	11.7	11.66
5/11/2004	4:52	12.07	11.97	11.78	11.78	11.55	11.44	10.78	10.53	11.54	11.51
5/11/2004	5:52	11.91	11.82	11.63	11.63	11.39	11.44	10.62	10.99	11.54	11.51
5/11/2004	6:52	11.76	11.66	11.47	11.47	11.39	11.28	10.47	11.46	11.39	11.51
5/11/2004	7:52	11.6	11.66	11.32	11.32	11.24	11.28	10.31	11.92	11.24	11.35
5/11/2004	8:52	11.6	11.66	11.32	11.32	11.24	11.28	10.31	12.39	11.24	11.35
5/11/2004	9:52	11.76	11.66	11.32	11.32	11.24	11.28	10.31	13.01	11.39	11.35
5/11/2004	10:52	11.76	11.66	11.47	11.47	11.39	11.59	10.47	13.47	11.54	11.51
5/11/2004	11:52	11.91	11.82	11.63	11.63	11.71	11.75	10.93	13.78	11.86	11.66
5/11/2004	12:52	12.37	12.28	12.09	12.09	12.02	12.22	11.24	13.93	12.01	11.97
5/11/2004	13:52	12.68	12.44	12.25	12.4	12.33	12.53	11.71	13.93	12.63	12.44
5/11/2004	14:52	12.99	12.75	12.72	12.71	12.79	12.99	12.32	13.78	12.94	12.91
5/11/2004	15:52	13.46	13.22	13.03	13.18	13.26	13.61	12.79	13.47	13.4	13.22
5/11/2004	16:52	13.62	13.52	13.5	13.48	13.72	14.07	13.41	13.17	13.86	13.68
5/11/2004	17:52	13.77	13.68	13.81	13.79	14.19	14.38	13.72	12.86	14.32	14.14
5/11/2004	18:52	13.77	13.68	13.96	13.94	14.5	14.54	14.02	12.54	14.48	14.46
5/11/2004	19:52	13.62	13.52	13.96	13.94	14.5	14.69	14.02	12.23	14.48	14.46
5/11/2004	20:52	13.46	13.37	13.96	13.94	14.5	14.54	13.87	12.08	14.17	14.3
5/11/2004	21:52	13.31	13.22	13.81	13.79	14.34	14.38	13.56	11.77	13.86	13.99
5/11/2004	22:52	13.15	13.06	13.66	13.64	14.19	14.23	13.25	11.61	13.56	13.68
5/11/2004	23:52	12.99	12.91	13.34	13.48	13.88	13.92	12.94	11.46	13.24	13.22
5/12/2004	0:52	12.84	12.91	13.19	13.18	13.72	13.61	12.63	11.15	12.94	12.91
5/12/2004	1:52	12.84	12.75	13.03	13.02	13.42	13.46	12.32	10.99	12.63	12.75
5/12/2004	2:52	12.84	12.75	12.72	12.87	13.11	13.15	12.17	10.84	12.47	12.44
5/12/2004	3:52	12.68	12.75	12.57	12.56	12.95	12.99	11.86	10.84	12.32	12.28

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/12/2004	4:52	12.53	12.59	12.41	12.4	12.79	12.68	11.55	10.99	12.16	12.13
5/12/2004	5:52	12.37	12.44	12.25	12.25	12.48	12.53	11.39	11.31	11.86	11.97
5/12/2004	6:52	12.22	12.28	12.09	12.09	12.33	12.37	11.08	11.77	11.86	11.82
5/12/2004	7:52	12.07	12.13	11.94	11.94	12.17	12.22	10.93	12.39	11.7	11.66
5/12/2004	8:52	11.91	11.97	11.78	11.94	12.02	12.06	10.93	13.01	11.54	11.51
5/12/2004	9:52	12.07	11.97	11.78	11.94	12.02	12.06	10.78	13.47	11.54	11.51
5/12/2004	10:52	12.22	12.13	11.94	11.94	12.02	12.06	10.93	13.93	11.7	11.66
5/12/2004	11:52	12.53	12.28	12.09	12.25	12.33	12.53	11.24	14.4	12.01	11.97
5/12/2004	12:52	12.84	12.75	12.41	12.56	12.64	12.84	11.71	14.56	12.47	12.44
5/12/2004	13:52	13.31	13.06	12.88	12.87	12.95	13.15	12.32	14.56	13.09	12.91
5/12/2004	14:52	13.31	13.22	13.19	13.18	13.72	13.92	12.94	14.4	13.71	13.53
5/12/2004	15:52	13.31	13.06	13.34	13.48	13.88	14.07	13.41	14.09	13.86	13.83
5/12/2004	16:52	13.62	13.37	13.81	13.79	14.34	14.69	13.72	13.78	14.01	13.83
5/12/2004	17:52	13.93	13.68	14.27	14.26	14.97	15.17	14.33	13.32	14.48	14.3
5/12/2004	18:52	13.93	13.83	14.43	14.41	15.13	15.33	14.49	12.86	14.95	14.93
5/12/2004	19:52	13.77	13.68	14.59	14.41	15.29	15.49	14.65	12.39	14.63	14.77
5/12/2004	20:52	13.62	13.52	14.43	14.41	15.29	15.33	14.49	11.92	14.32	14.46
5/12/2004	21:52	13.46	13.37	14.27	14.26	14.97	15.01	14.18	11.46	14.17	14.14
5/12/2004	22:52	13.31	13.37	13.96	13.94	14.66	14.69	13.87	11.15	13.86	13.83
5/12/2004	23:52	13.15	13.22	13.81	13.79	14.34	14.38	13.41	10.84	13.56	13.53
5/13/2004	0:52	13.15	13.06	13.5	13.48	14.03	13.92	12.94	10.38	13.09	13.22
5/13/2004	1:52	12.99	13.06	13.19	13.18	13.57	13.46	12.48	10.22	12.63	12.75
5/13/2004	2:52	12.84	12.91	12.88	12.87	13.11	13.15	12.02	10.07	12.32	12.28
5/13/2004	3:52	12.68	12.75	12.57	12.56	12.79	12.68	11.55	10.22	11.86	11.97
5/13/2004	4:52	12.53	12.44	12.25	12.25	12.33	12.37	11.24	10.53	11.54	11.66
5/13/2004	5:52	12.22	12.28	11.94	11.94	12.02	12.06	10.78	11.15	11.24	11.35
5/13/2004	6:52	11.91	11.97	11.63	11.63	11.71	11.75	10.47	12.08	10.93	11.04
5/13/2004	7:52	11.76	11.82	11.47	11.47	11.39	11.44	10.16	13.17	10.77	10.73
5/13/2004	8:52	11.6	11.66	11.32	11.32	11.24	11.28	10	14.24	10.47	10.58
5/13/2004	9:52	11.91	11.66	11.32	11.47	11.24	11.28	10.16	15.19	10.62	10.58
5/13/2004	10:52	12.22	11.97	11.63	11.63	11.39	11.59	10.47	15.82	10.93	10.89
5/13/2004	11:52	12.68	12.44	12.09	12.09	12.02	12.22	11.08	16.46	11.7	11.51
5/13/2004	12:52	13.31	13.06	12.57	12.71	12.64	12.99	12.17	16.62	12.47	12.28

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/13/2004	13:52	13.93	13.68	13.34	13.33	13.57	13.92	13.25	16.62	13.4	13.06
5/13/2004	14:52	14.39	14.14	13.96	14.1	14.5	14.86	14.18	16.46	14.32	13.99
5/13/2004	15:52	14.87	14.77	14.74	14.73	15.61	15.96	15.12	16.14	15.27	14.93
5/13/2004	16:52	15.34	15.08	15.39	15.36	16.4	16.75	15.92	15.66	16.22	15.88
5/13/2004	17:52	15.5	15.41	15.87	15.83	17.04	17.39	16.39	15.19	16.85	16.52
5/13/2004	18:52	15.5	15.41	16.02	15.99	17.52	17.87	16.7	14.71	17.01	16.99
5/13/2004	19:52	15.5	15.41	16.18	15.99	17.68	17.87	16.7	14.24	16.85	16.83
5/13/2004	20:52	15.34	15.24	16.02	15.99	17.52	17.71	16.39	13.93	16.53	16.52
5/13/2004	21:52	15.34	15.24	15.87	15.83	17.36	17.39	16.07	13.47	16.22	16.2
5/13/2004	22:52	15.18	15.08	15.54	15.52	16.88	16.91	15.6	13.01	15.74	15.88
5/13/2004	23:52	15.18	15.08	15.39	15.36	16.56	16.43	15.28	12.7	15.27	15.41
5/15/2004	11:52	14.56	14.45	16.18	16.15	17.2	17.23	15.76	12.7	15.58	15.73
5/15/2004	12:52	14.71	14.61	15.71	15.68	16.72	16.75	15.28	12.39	14.95	15.09
5/15/2004	13:52	14.71	14.61	15.39	15.36	16.24	16.12	14.65	12.23	14.32	14.46
5/15/2004	14:52	14.71	14.61	14.91	14.88	15.77	15.64	14.18	12.23	13.86	13.99
5/15/2004	15:52	14.56	14.45	14.59	14.57	15.29	15.17	13.72	12.54	13.24	13.37
5/15/2004	16:52	14.56	14.45	14.12	14.26	14.82	14.69	13.1	12.86	12.78	12.91
5/15/2004	17:52	14.71	14.45	13.81	13.79	14.5	14.38	12.79	13.32	12.47	12.59
5/15/2004	18:52	14.71	14.61	13.5	13.64	14.19	14.07	12.32	13.78	12.01	12.13
5/15/2004	19:52	14.56	14.45	13.34	13.48	13.88	13.92	12.17	14.09	11.86	11.97
5/15/2004	20:52	14.56	14.45	13.34	13.33	13.88	13.92	12.17	14.24	11.86	11.82
5/15/2004	21:52	14.56	14.45	13.5	13.48	13.88	14.07	12.48	14.4	12.16	12.13
5/15/2004	22:52	14.39	14.29	13.66	13.64	14.19	14.23	12.79	14.56	12.47	12.44
5/15/2004	23:52	14.24	14.29	13.81	13.94	14.5	14.69	13.25	14.71	12.94	12.75
5/16/2004	0:52	14.08	14.14	14.12	14.1	14.82	14.86	13.56	14.71	13.24	13.22
5/16/2004	1:52	14.08	13.98	14.27	14.26	15.13	15.33	13.87	14.56	13.56	13.53
5/16/2004	2:52	13.93	13.83	14.59	14.57	15.29	15.49	14.18	14.4	13.86	13.68
5/16/2004	3:52	13.62	13.68	14.74	14.73	15.45	15.64	14.33	14.24	14.01	13.99
5/16/2004	4:52	13.46	13.37	14.91	14.88	15.61	15.64	14.49	14.09	14.32	14.14
5/16/2004	5:52	13.31	13.22	14.91	14.88	15.61	15.81	14.65	13.78	14.48	14.46
5/16/2004	6:52	12.99	13.06	14.91	14.88	15.61	15.64	14.65	13.63	14.63	14.62
5/16/2004	7:52	12.84	12.91	14.91	14.88	15.45	15.49	14.49	13.32	14.63	14.62
5/16/2004	8:52	12.84	12.75	14.74	14.73	15.29	15.33	14.33	13.01	14.48	14.62

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/16/2004	9:52	12.99	12.91	14.59	14.57	15.13	15.17	14.18	12.7	14.32	14.3
5/16/2004	10:52	13.31	13.06	14.43	14.41	14.97	15.01	14.02	12.39	14.01	14.14
5/16/2004	11:52	13.62	13.52	14.27	14.26	14.66	14.69	13.87	12.08	13.86	13.83
5/16/2004	12:52	14.24	13.83	14.12	14.1	14.5	14.38	13.56	11.92	13.56	13.53
5/16/2004	13:52	14.71	14.45	13.81	13.79	14.19	14.23	13.25	11.77	13.24	13.37
5/16/2004	14:52	15.18	14.92	13.66	13.64	13.88	13.92	13.1	11.77	13.09	13.06
5/16/2004	15:52	15.5	15.24	13.34	13.48	13.57	13.61	12.79	12.08	12.78	12.91
5/16/2004	16:52	15.66	15.41	13.19	13.18	13.26	13.3	12.48	12.7	12.47	12.59
5/16/2004	17:52	15.98	15.72	13.03	13.02	13.11	12.99	12.17	13.32	12.16	12.28
5/16/2004	18:52	15.98	15.88	12.88	12.87	12.79	12.84	11.86	14.24	11.86	11.97
5/16/2004	19:52	15.98	15.88	12.72	12.71	12.64	12.68	11.71	15.19	11.7	11.82
5/16/2004	20:52	15.98	15.88	12.72	12.71	12.64	12.84	11.71	15.98	11.86	11.82
5/16/2004	21:52	15.82	15.72	12.88	13.02	12.95	13.15	12.02	16.46	12.16	12.13
5/16/2004	22:52	15.66	15.72	13.34	13.33	13.26	13.61	12.48	16.77	12.78	12.59
5/16/2004	23:52	15.66	15.56	13.81	13.79	13.88	14.23	13.1	17.09	13.4	13.22
5/17/2004	0:52	15.5	15.41	14.27	14.41	14.5	14.86	14.02	17.09	14.01	13.83
5/17/2004	1:52	15.34	15.24	14.91	15.04	15.45	15.81	14.81	16.93	14.79	14.62
5/17/2004	2:52	15.18	15.08	15.54	15.52	16.24	16.59	15.76	16.62	15.42	15.09
5/17/2004	3:52	14.87	14.92	16.02	15.99	16.88	17.23	16.23	16.14	16.22	15.88
5/17/2004	4:52	14.71	14.61	16.5	16.47	17.36	17.87	16.7	15.66	16.53	16.36
5/17/2004	5:52	14.39	14.45	16.66	16.62	17.84	18.19	17.02	15.19	17.33	17.15
5/17/2004	6:52	14.08	14.14	16.66	16.62	18	18.19	17.02	14.71	17.33	17.31
5/17/2004	7:52	13.77	13.83	16.66	16.62	17.84	18.03	16.86	14.24	17.17	17.15
5/17/2004	8:52	13.77	13.68	16.5	16.47	17.68	17.71	16.54	13.78	16.69	16.83
5/17/2004	9:52	13.77	13.68	16.18	16.15	17.36	17.39	16.07	13.47	16.22	16.36
5/17/2004	10:52	13.93	13.83	15.87	15.99	16.88	16.91	15.6	13.01	15.58	15.73
5/17/2004	11:52	14.39	14.14	15.54	15.68	16.4	16.28	15.28	12.7	14.95	15.09
5/17/2004	12:52	15.03	14.77	15.23	15.2	15.92	15.81	14.81	12.39	14.32	14.46
5/17/2004	13:52	15.34	15.08	14.91	14.88	15.45	15.49	14.33	12.23	13.86	13.99
5/17/2004	14:52	15.66	15.41	14.43	14.57	14.97	15.01	13.87	12.23	13.4	13.53
5/17/2004	15:52	15.5	15.41	14.12	14.1	14.66	14.69	13.41	12.54	13.09	13.06
5/17/2004	16:52	15.66	15.56	13.81	13.79	14.34	14.23	13.1	13.17	12.78	12.75
5/17/2004	17:52	15.66	15.56	13.5	13.48	14.03	13.92	12.63	13.93	12.32	12.44

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/17/2004	18:52	15.5	15.56	13.34	13.33	13.72	13.76	12.32	14.71	12.16	12.13
5/17/2004	19:52	15.5	15.41	13.19	13.18	13.57	13.46	12.17	15.34	11.86	11.82
5/17/2004	20:52	15.5	15.41	13.19	13.18	13.57	13.46	12.17	15.66	11.86	11.82
5/17/2004	21:52	15.34	15.41	13.34	13.48	13.57	13.76	12.48	15.98	12.32	12.28
5/17/2004	22:52	15.34	15.24	13.66	13.79	13.88	14.07	12.94	16.14	12.94	12.75
5/17/2004	23:52	15.18	15.08	14.27	14.41	14.5	14.69	13.56	16.29	13.71	13.53
5/18/2004	0:52	15.03	15.08	14.74	14.88	15.29	15.64	14.33	16.14	14.48	14.14
5/18/2004	1:52	15.03	14.92	15.23	15.2	15.92	16.28	15.12	15.82	15.27	15.09
5/18/2004	2:52	14.87	14.92	15.54	15.52	16.4	16.59	15.44	15.66	15.9	15.73
5/18/2004	3:52	14.71	14.77	15.87	15.83	16.56	16.91	15.76	15.34	16.06	16.04
5/18/2004	4:52	14.56	14.61	16.02	15.99	17.04	17.23	15.92	14.87	16.22	16.04
5/18/2004	5:52	14.39	14.45	16.18	16.15	17.04	17.07	16.07	14.56	16.37	16.36
5/18/2004	6:52	14.24	14.29	16.18	16.15	16.88	16.91	16.07	14.24	16.22	16.36
5/18/2004	7:52	14.08	13.98	16.02	15.99	16.56	16.59	15.92	14.09	15.9	15.88
5/18/2004	8:52	13.93	13.83	15.87	15.83	16.24	16.28	15.6	13.78	15.42	15.57
5/18/2004	9:52	13.93	13.83	15.54	15.68	15.92	15.96	15.28	13.47	14.95	15.09
5/18/2004	10:52	13.93	13.83	15.39	15.36	15.61	15.64	14.96	13.32	14.63	14.77
5/18/2004	11:52	13.77	13.83	15.23	15.04	15.29	15.33	14.65	13.17	14.32	14.3
5/18/2004	12:52	14.24	13.83	14.91	14.88	15.13	15.17	14.33	13.01	14.01	13.99
5/18/2004	13:52	14.71	14.45	14.59	14.57	14.82	14.86	14.02	12.86	13.71	13.68
5/18/2004	14:52	15.03	14.92	14.43	14.41	14.66	14.69	13.72	12.86	13.56	13.53
5/18/2004	15:52	15.34	15.08	14.12	14.26	14.5	14.54	13.56	13.01	13.4	13.37
5/18/2004	16:52	15.5	15.56	13.96	14.1	14.5	14.38	13.41	13.01	13.24	13.22
5/18/2004	17:52	15.34	15.24	13.81	13.79	14.34	14.23	13.1	13.47	13.09	13.22
5/18/2004	18:52	15.18	15.24	13.81	13.79	14.19	14.23	12.94	14.09	13.09	13.06
5/18/2004	19:52	15.18	15.08	13.66	13.64	14.03	14.07	12.94	14.71	12.94	12.91
5/18/2004	20:52	15.03	15.08	13.66	13.64	14.03	14.07	12.79	15.34	12.94	12.91
5/18/2004	21:52	15.03	14.92	13.66	13.64	14.03	14.07	12.94	15.51	13.09	13.06
5/18/2004	22:52	14.87	14.92	13.66	13.64	14.19	14.23	12.94	15.66	13.4	13.37
5/18/2004	23:52	14.87	14.77	13.96	14.1	14.03	14.07	13.25	15.51	13.4	13.37
5/19/2004	0:52	14.71	14.61	14.59	14.57	15.29	15.33	14.18	12.54	14.63	14.62
5/19/2004	1:52	14.56	14.61	14.43	14.41	15.13	15.17	13.87	12.39	14.32	14.46
5/19/2004	2:52	14.39	14.45	14.12	14.26	14.82	14.86	13.72	12.39	14.17	14.14

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/19/2004	3:52	14.24	14.29	15.39	15.36	15.77	16.12	15.44	14.56	15.42	15.41
5/27/2004	5:52	15.34	15.41	15.23	15.2	15.77	15.81	14.65	14.71	14.17	14.14
5/27/2004	6:52	15.18	15.24	14.91	15.04	15.61	15.49	14.33	15.34	14.01	13.99
5/27/2004	7:52	15.03	15.08	14.74	14.88	15.45	15.49	14.18	15.82	13.86	13.83
5/27/2004	8:52	15.18	14.92	14.74	14.73	15.61	15.64	14.18	15.98	14.01	13.99
5/27/2004	9:52	15.18	15.08	14.91	14.88	15.77	15.81	14.18	16.14	14.17	14.14
5/27/2004	10:52	15.5	15.24	15.07	15.04	16.08	16.28	14.33	16.14	14.48	14.46
5/27/2004	11:52	15.66	15.56	15.23	15.2	16.56	16.75	14.49	16.14	14.95	14.77
5/27/2004	12:52	16.14	16.04	15.54	15.68	17.2	17.23	15.12	16.14	15.58	15.25
5/27/2004	13:52	16.29	16.19	15.87	15.68	17.2	17.23	15.76	16.14	15.9	15.73
5/27/2004	14:52	16.14	16.04	16.02	15.99	17.2	17.23	15.92	15.98	15.9	15.88
5/27/2004	15:52	16.14	16.04	16.18	15.99	17.2	17.23	16.07	15.82	15.9	15.88
5/27/2004	16:52	15.98	15.88	16.18	16.15	17.04	17.23	16.07	15.66	15.9	15.88
5/27/2004	17:52	15.98	15.88	16.34	16.31	17.04	17.23	16.07	15.51	15.9	15.88
5/27/2004	18:52	16.14	15.88	16.34	16.31	17.2	17.39	16.07	15.19	15.74	15.73
5/27/2004	19:52	16.14	16.04	16.18	16.31	17.2	17.23	16.07	15.03	15.74	15.73
5/27/2004	20:52	16.14	16.04	16.18	16.15	17.04	17.07	15.92	14.87	15.58	15.57
5/27/2004	21:52	16.14	16.04	16.02	15.99	16.72	16.75	15.92	14.71	15.42	15.25
5/27/2004	22:52	15.98	15.88	15.87	15.99	16.56	16.59	15.6	14.56	15.11	15.09
5/27/2004	23:52	15.82	15.88	15.87	15.68	16.4	16.43	15.44	14.4	14.95	14.93
5/28/2004	0:52	15.66	15.72	15.71	15.68	16.24	16.28	15.12	14.24	14.79	14.77
5/28/2004	1:52	15.66	15.56	15.39	15.52	16.08	16.12	14.96	14.09	14.63	14.62
5/28/2004	2:52	15.5	15.41	15.23	15.2	15.92	15.96	14.65	13.93	14.48	14.46
5/28/2004	3:52	15.5	15.41	15.07	15.04	15.77	15.81	14.49	13.78	14.32	14.3
5/28/2004	4:52	15.34	15.24	14.91	14.88	15.61	15.64	14.33	13.78	14.32	14.3
5/28/2004	5:52	15.03	15.08	14.74	14.88	15.45	15.49	14.33	13.93	14.17	14.14
5/28/2004	6:52	14.87	14.92	14.74	14.73	15.29	15.33	14.18	13.93	14.01	13.99
5/28/2004	7:52	14.71	14.61	14.59	14.57	15.13	15.17	14.02	14.24	13.86	13.99
5/28/2004	8:52	14.56	14.61	14.43	14.41	14.97	15.01	13.87	14.87	13.86	13.83
5/28/2004	9:52	14.39	14.45	14.43	14.41	14.97	15.01	13.72	14.87	13.86	13.83
5/28/2004	10:52	14.39	14.29	14.27	14.26	14.97	15.01	13.72	15.34	13.71	13.68
5/28/2004	11:52	14.56	14.45	14.43	14.41	15.13	15.17	13.72	15.66	14.01	13.83
5/28/2004	12:52	14.71	14.45	14.59	14.57	15.29	15.49	13.87	15.82	14.32	13.99

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
5/28/2004	13:52	15.18	14.92	14.91	14.88	16.08	16.28	14.18	15.98	14.79	14.3
5/28/2004	14:52	15.34	15.24	15.23	15.2	16.24	16.43	14.81	15.82	15.42	14.93
5/28/2004	15:52	15.18	15.24	15.07	15.04	16.24	16.43	14.96	15.51	15.74	15.25
5/28/2004	16:52	15.5	15.41	15.71	15.68	16.56	16.75	15.28	15.03	16.06	15.57
5/28/2004	17:52	15.5	15.41	15.87	15.83	16.72	16.75	15.92	14.71	16.22	15.73
5/28/2004	18:52	15.5	15.41	16.02	15.99	16.56	16.59	16.07	14.4	16.06	15.88
5/28/2004	19:52	15.34	15.41	15.87	15.83	16.4	16.43	16.07	14.09	15.74	15.57
5/28/2004	20:52	15.34	15.24	15.71	15.68	16.24	16.28	15.76	13.63	15.27	15.41
5/28/2004	21:52	15.18	15.08	15.54	15.52	15.92	15.96	15.44	13.32	14.95	15.09
5/28/2004	22:52	15.03	14.92	15.23	15.2	15.77	15.64	15.12	13.01	14.63	14.77
5/28/2004	23:52	14.87	14.92	14.91	15.04	15.45	15.33	14.65	12.7	14.17	14.3
5/29/2004	0:52	14.71	14.61	14.59	14.73	15.13	15.17	14.33	12.39	13.71	13.99
5/29/2004	1:52	14.39	14.45	14.43	14.41	14.82	14.86	14.02	12.08	13.24	13.53
5/29/2004	2:52	14.24	14.29	14.12	14.1	14.5	14.38	13.56	11.92	12.78	13.22
5/29/2004	3:52	13.93	13.98	13.81	13.94	14.19	14.07	13.25	11.92	12.47	12.91
5/29/2004	4:52	13.62	13.68	13.66	13.64	13.88	13.76	12.94	12.23	12.16	12.59
5/29/2004	5:52	13.46	13.37	13.34	13.48	13.57	13.61	12.48	12.54	11.86	12.28
5/29/2004	6:52	13.15	13.22	13.03	13.18	13.26	13.3	12.17	13.01	11.7	12.13
5/29/2004	7:52	12.99	12.91	12.88	13.02	13.11	13.15	12.02	13.63	11.54	11.97
5/29/2004	8:52	12.99	12.91	12.88	12.87	12.95	12.99	11.86	14.24	11.7	11.82
5/29/2004	9:52	13.15	13.06	12.88	12.87	13.26	13.3	11.86	14.87	12.01	11.97
5/29/2004	10:52	13.31	13.22	13.03	13.18	13.57	13.61	12.02	15.51	12.47	12.28
5/29/2004	11:52	13.46	13.37	13.34	13.33	14.03	14.23	12.48	15.98	13.09	12.75
6/29/2004	10:52	19.68	19.57	18.43	18.38	20.42	20.62	17.98	21.8	18.77	18.76
6/29/2004	11:52	20.17	20.06	18.76	18.7	20.75	20.95	18.46	21.47	19.09	18.92
6/29/2004	12:52	20.65	20.38	19.08	19.19	21.25	21.62	19.11	20.97	19.74	19.74
6/29/2004	13:52	21.31	21.03	19.74	19.68	21.92	22.28	19.92	20.47	20.39	20.38
6/29/2004	14:52	21.81	21.7	20.23	20.32	22.59	22.78	20.57	19.99	21.04	20.87
6/29/2004	15:52	22.31	22.2	20.88	20.81	23.09	23.29	21.39	19.67	21.54	21.54
6/29/2004	16:52	22.31	22.37	21.05	20.97	23.09	23.12	21.72	19.34	21.71	21.71
6/29/2004	17:52	21.64	21.87	20.88	20.81	22.59	22.62	21.39	19.02	21.04	21.21
6/29/2004	18:52	21.14	21.2	20.72	20.64	22.26	22.28	20.89	18.69	20.23	20.38
6/29/2004	19:52	20.82	20.87	20.56	20.48	22.09	22.28	20.41	18.37	19.91	19.9

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
6/29/2004	20:52	20.65	20.71	20.23	20.16	21.92	21.95	19.92	18.05	19.58	19.74
6/29/2004	21:52	20.49	20.38	19.9	19.84	21.59	21.45	19.6	17.73	19.42	19.58
6/29/2004	22:52	20.33	20.22	19.57	19.51	21.08	21.12	19.27	17.41	19.26	19.25
6/29/2004	23:52	20.01	20.06	19.24	19.19	20.75	20.78	18.95	16.93	18.77	18.92
6/30/2004	0:52	19.84	19.73	18.92	18.86	20.42	20.46	18.62	16.62	18.44	18.43
6/30/2004	1:52	19.52	19.41	18.59	18.54	20.1	20.13	18.3	16.46	17.97	17.95
6/30/2004	2:52	19.19	19.24	18.27	18.22	19.78	19.81	17.98	16.29	17.81	17.79
6/30/2004	3:52	18.86	18.92	17.94	17.89	19.46	19.49	17.66	16.29	17.49	17.47
6/30/2004	4:52	18.53	18.59	17.62	17.73	19.13	19.17	17.18	16.62	17.17	17.31
6/30/2004	5:52	18.21	18.27	17.46	17.42	18.81	18.84	16.86	17.09	17.01	16.99
6/30/2004	6:52	18.05	17.95	17.14	17.1	18.64	18.52	16.54	17.73	16.85	16.83
6/30/2004	7:52	17.73	17.79	16.98	16.94	18.32	18.36	16.23	18.37	16.69	16.68
6/30/2004	8:52	17.73	17.63	16.82	16.94	18.32	18.36	16.07	19.18	16.69	16.68
6/30/2004	9:52	17.89	17.63	16.98	16.94	18.48	18.52	16.23	19.83	17.01	16.99
6/30/2004	10:52	18.21	17.95	17.14	17.1	18.64	18.84	16.39	20.31	17.49	17.31
6/30/2004	11:52	18.7	18.43	17.46	17.57	19.13	19.33	16.86	20.64	17.81	17.79
6/30/2004	12:52	19.19	18.92	17.94	18.06	19.78	19.97	17.49	20.64	18.29	18.27
7/19/2004	11:52	20.33	20.06	19.08	18.86	20.59	20.78	18.62	22.13		
7/19/2004	12:52	20.82	20.71	19.41	19.03	21.08	21.28	19.11	22.13		
7/19/2004	13:52	21.48	21.53	20.06	19.35	21.76	21.95	19.76	22.13		
7/19/2004	14:52	22.14	22.03	20.39	19.68	22.26	22.62	20.41	21.97		
7/19/2004	15:52	22.48	22.53	20.88	20	22.92	23.29	21.06	21.63		
7/19/2004	16:52	22.99	22.87	21.38	20.32	23.43	23.63	21.72	21.3		
7/19/2004	17:52	22.99	23.04	21.71	20.64	23.77	23.97	21.89	21.13		
7/19/2004	18:52	22.48	22.71	21.54	20.81	23.6	23.8	22.06	20.97		
7/19/2004	19:52	22.31	22.37	21.71	20.97	23.6	23.63	21.89	20.64		
7/19/2004	20:52	21.98	22.03	21.54	21.14	23.43	23.46	21.72	20.47		
7/19/2004	21:52	21.81	21.7	21.38	21.3	23.09	23.12	21.56	20.15		
7/19/2004	22:52	21.48	21.53	21.21	21.14	22.76	22.78	21.22	19.83		
7/19/2004	23:52	21.31	21.37	21.05	21.14	22.42	22.45	21.06	19.67		
7/20/2004	0:52	21.14	21.2	20.72	20.97	22.26	22.12	20.89	19.34		
7/20/2004	1:52	21.14	21.03	20.56	20.81	21.92	21.95	20.57	19.18		
7/20/2004	2:52	20.82	20.87	20.39	20.64	21.59	21.62	20.41	19.02		

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
7/20/2004	3:52	20.65	20.71	20.06	20.48	21.42	21.28	20.08	18.86		
7/20/2004	4:52	20.49	20.38	19.9	20.32	21.08	21.12	19.76	19.02		
7/20/2004	5:52	20.17	20.22	19.57	20.16	20.92	20.78	19.6	19.34		
7/20/2004	6:52	20.01	19.89	19.41	19.84	20.59	20.62	19.27	19.67		
7/20/2004	7:52	19.84	19.73	19.24	19.68	20.42	20.46	19.11	20.31		
7/20/2004	8:52	19.84	19.73	19.24	19.51	20.42	20.46	18.78	20.8		
7/20/2004	9:52	20.01	19.89	19.24	19.51	20.42	20.46	18.78	21.47		
7/20/2004	10:52	20.33	20.22	19.41	19.51	20.59	20.62	18.95	21.8		
7/20/2004	11:52	20.65	20.54	19.74	19.51	20.75	20.95	19.27	22.13		
8/16/2004	11:52	20.11	20.74	20.06	20.16	21.25	21	19.86	20.15		
8/16/2004	12:52	20.11	21.23	20.38	20.32	21.42	21.17	20.02	19.99	19.02	18.76
8/16/2004	13:52	20.27	21.56	20.54	20.48	21.76	21.5	20.34	19.83	19.18	19.42
8/16/2004	14:52	20.43	21.89	20.71	20.81	22.26	22	20.5	19.67	19.67	19.9
8/16/2004	15:52	20.76	22.22	20.88	20.97	22.59	22.33	20.83	19.67	20.16	20.54
8/16/2004	16:52	20.92	22.39	21.04	21.14	22.76	22.5	20.99	19.67	20.48	20.71
8/16/2004	17:52	21.08	22.39	21.38	21.3	22.76	22.67	20.99	19.83	20.64	21.04
8/16/2004	18:52	21.08	22.39	21.38	21.3	22.76	22.67	20.99	19.99	20.64	21.04
8/16/2004	19:52	21.25	22.39	21.21	21.3	22.76	22.67	20.99	20.15	20.64	20.87
8/16/2004	20:52	21.25	22.22	21.04	21.14	22.59	22.67	20.83	20.47	20.64	20.71
8/16/2004	21:52	21.25	22.06	20.88	20.97	22.42	22.33	20.83	20.64	20.32	20.54
8/16/2004	22:52	21.08	21.89	20.71	20.81	22.26	22.17	20.67	20.8	19.99	20.22
8/16/2004	23:52	21.08	21.56	20.54	20.64	22.09	22	20.5	20.97	19.67	20.06
8/17/2004	0:52	20.92	21.39	20.54	20.64	21.92	21.83	20.5	21.13	19.5	19.58
8/17/2004	1:52	20.76	21.23	20.38	20.48	21.59	21.67	20.34	21.13	19.5	19.25
8/17/2004	2:52	20.59	21.07	20.38	20.32	21.42	21.5	20.18	20.97	19.34	18.92
8/17/2004	3:52	20.59	20.91	20.22	20.16	21.25	21.33	20.02	20.97	19.18	18.43
8/17/2004	4:52	20.43	20.74	20.06	20	21.08	21	19.86	20.8	19.02	18.11
8/17/2004	5:52	20.43	20.58	19.89	19.84	20.92	20.83	19.69	20.64	18.85	17.79
8/17/2004	6:52	20.27	20.42	19.73	19.68	20.75	20.67	19.37	20.47	18.69	17.47
8/17/2004	7:52	20.11	20.26	19.57	19.51	20.59	20.67	19.21	20.47	18.53	17.31
8/17/2004	8:52	20.11	20.09	19.41	19.51	20.59	20.51	19.21	20.31	18.37	17.15
8/17/2004	9:52	19.94	20.09	19.41	19.51	20.42	20.34	19.04	20.15	18.37	17.15
8/17/2004	10:52	19.94	20.09	19.41	19.51	20.59	20.34	19.04	19.99	18.37	17.63

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
8/17/2004	11:52	19.78	20.09	19.41	19.35	20.59	20.51	18.88	19.83	18.37	18.27
8/17/2004	12:52	19.78	20.09	19.41	19.51	20.75	20.51	19.04	19.67	18.37	18.92
8/17/2004	13:52	19.78	20.42	19.73	19.84	20.92	20.67	19.21	19.51	18.69	19.58
8/17/2004	14:52	19.94	20.74	20.06	20	21.25	21	19.53	19.34	19.18	20.38
8/17/2004	15:52	20.11	21.23	20.38	20.32	21.59	21.33	20.02	19.18	19.67	20.87
8/17/2004	16:52	20.43	21.56	20.54	20.64	21.92	21.67	20.34	19.18	20.16	21.37
8/17/2004	17:52	20.59	22.06	20.71	20.81	22.09	21.83	20.5	19.02	20.48	21.54
8/17/2004	18:52	20.76	22.06	20.71	20.81	22.26	22	20.5	19.02	20.64	21.37
8/17/2004	19:52	20.92	21.89	20.71	20.81	22.09	22	20.5	19.18	20.64	21.04
8/17/2004	20:52	20.92	21.72	20.71	20.64	22.09	22	20.34	19.34	20.48	20.87
8/17/2004	21:52	20.92	21.56	20.54	20.48	22.09	22	20.18	19.67	20.32	20.38
8/17/2004	22:52	20.76	21.23	20.38	20.32	21.92	21.83	20.02	19.99	20.16	20.06
8/17/2004	23:52	20.59	21.07	20.22	20.32	21.76	21.67	20.02	20.15	19.99	19.58
8/22/2004	6:52	20.27	20.26	19.41	19.35	20.1	20.18	18.72	20.15	17.72	17.53
8/22/2004	7:52	20.11	19.93	19.08	19.19	19.94	20.02	18.55	19.99	17.56	17.53
8/22/2004	8:52	19.94	19.93	18.92	19.03	19.78	19.86	18.39	19.83	17.4	17.69
8/22/2004	9:52	19.78	19.77	18.92	18.86	19.78	19.7	18.39	19.67	17.4	18.33
8/22/2004	10:52	19.78	19.77	18.76	18.86	19.78	19.7	18.39	19.51	17.56	18.82
8/22/2004	11:52	19.78	19.77	18.76	18.86	19.78	19.7	18.39	19.34	17.56	19.14
8/22/2004	12:52	19.62	19.93	18.92	18.86	19.78	19.7	18.39	19.02	17.72	19.63
8/22/2004	13:52	19.62	20.09	18.92	19.03	19.94	19.7	18.55	18.86	17.72	20.28
8/22/2004	14:52	19.62	20.09	19.08	19.03	19.78	19.7	18.55	18.69	17.72	20.93
8/22/2004	15:52	19.62	19.93	19.08	19.03	19.78	19.7	18.55	18.53	17.72	21.26
8/22/2004	16:52	19.62	19.93	18.92	19.03	19.78	19.7	18.55	18.53	17.56	21.43
8/22/2004	17:52	19.62	19.77	18.92	18.86	19.62	19.54	18.39	18.53	17.56	21.26
8/22/2004	18:52	19.62	19.6	18.76	18.86	19.62	19.54	18.23	18.53	17.4	21.1
8/22/2004	19:52	19.45	19.44	18.59	18.7	19.29	19.37	18.07	18.53	17.24	20.61
8/22/2004	20:52	19.45	19.12	18.43	18.54	19.13	19.21	17.91	18.69	17.24	20.12
8/22/2004	21:52	19.29	18.95	18.43	18.38	18.97	19.05	17.74	18.69	16.92	19.79
8/22/2004	22:52	19.13	18.79	18.11	18.22	18.81	18.89	17.58	18.69	16.92	19.31
8/22/2004	23:52	19.13	18.63	18.11	18.06	18.64	18.72	17.43	18.53	16.77	18.98
8/23/2004	0:52	18.97	18.47	17.94	17.89	18.48	18.56	17.43	18.37	16.61	18.66
8/23/2004	1:52	18.8	18.31	17.78	17.73	18.32	18.4	17.27	18.21	16.45	18.49

Day	Time	Notus dn	Notus up	Indian up	Indian dn	Dixie up	Dixie dn	Mason up	Mason dn	Conway up	Conway dn
8/23/2004	2:52	18.8	18.14	17.62	17.57	18.16	18.08	17.11	18.05	16.45	18.17
8/23/2004	3:52	18.64	17.98	17.46	17.42	18	17.92	16.95	17.89	16.13	17.85
8/23/2004	4:52	18.48	17.82	17.3	17.26	17.68	17.76	16.63	17.73	15.97	17.53
8/23/2004	5:52	18.32	17.66	17.14	17.1	17.52	17.59	16.47	17.57	15.82	17.21
8/23/2004	6:52	18.16	17.5	16.98	16.94	17.36	17.43	16.47	17.57	15.82	17.06
8/23/2004	7:52	18.16	17.34	16.82	16.94	17.2	17.28	16.32	17.41	15.82	16.89
8/23/2004	8:52	17.99	17.18	16.66	16.78	17.2	17.12	16.16	17.25	15.66	17.21
8/23/2004	9:52	17.83	17.18	16.66	16.78	17.2	17.12	16.32	17.09	15.82	17.69
8/23/2004	10:52	17.83	17.34	16.82	16.78	17.36	17.12	16.47	16.93	15.97	18.17
8/23/2004	11:52	17.83	17.66	16.98	17.1	17.68	17.43	16.63	16.77	16.45	18.66

Dn = downstream; up = upstream of locations listed in Table C-11.

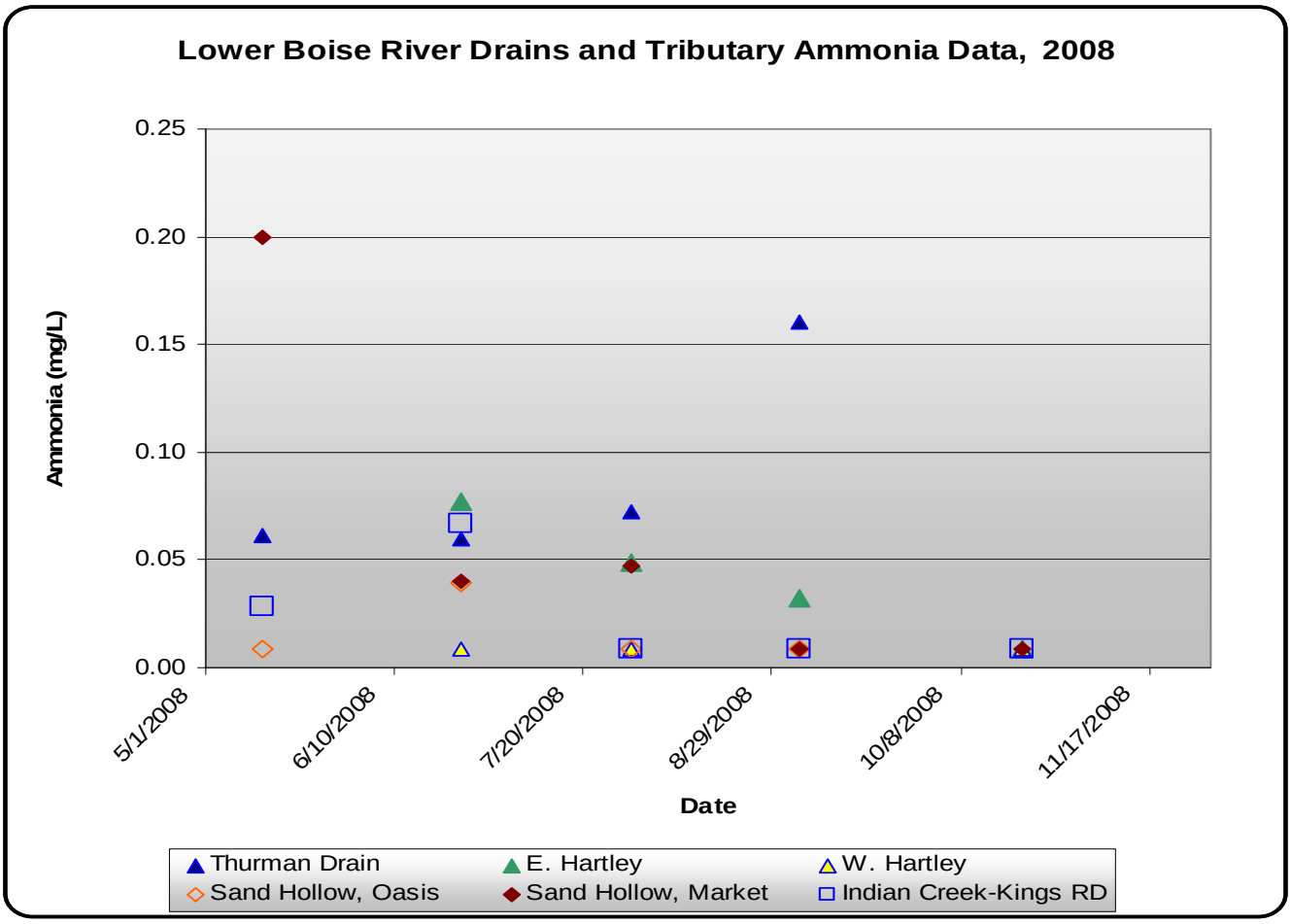


Figure C-1. Reported results of ammonia from samples collected from the Lower Boise River Drains and Tributaries by DEQ, 2008.

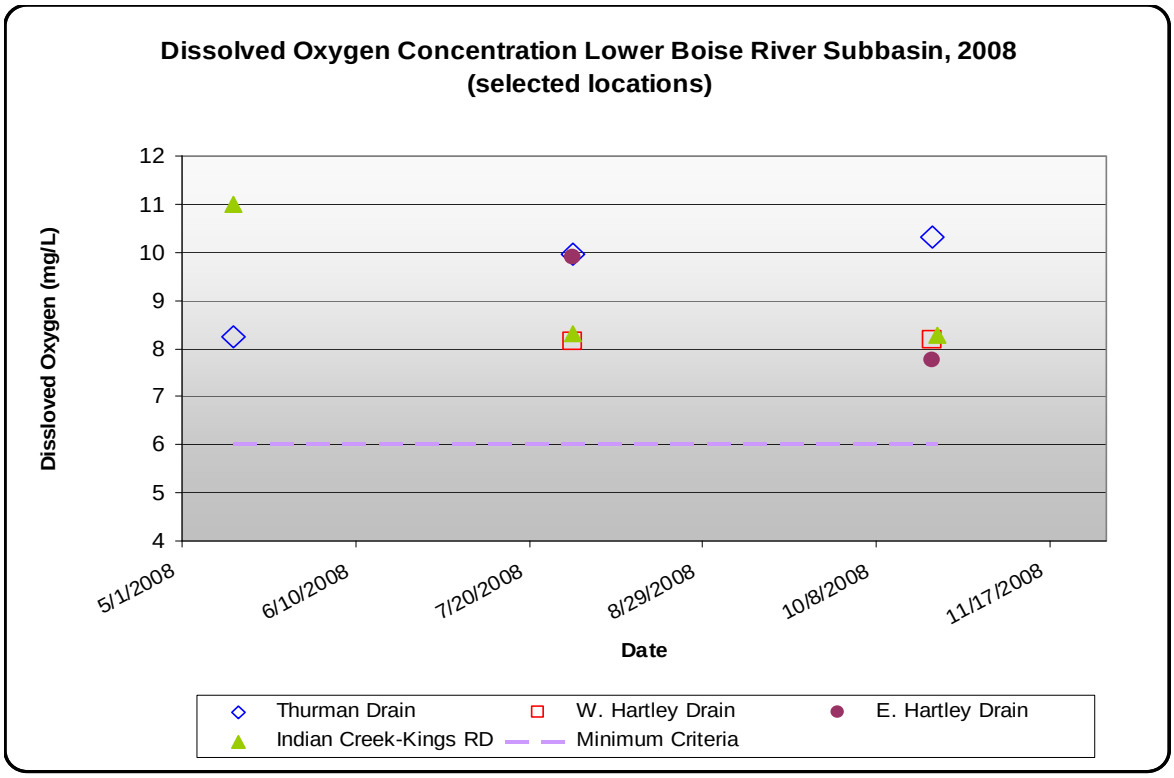


Figure C-2. Reported results of dissolved oxygen (DO) from data collected from Lower Boise River load allocation locations by DEQ, 2008.

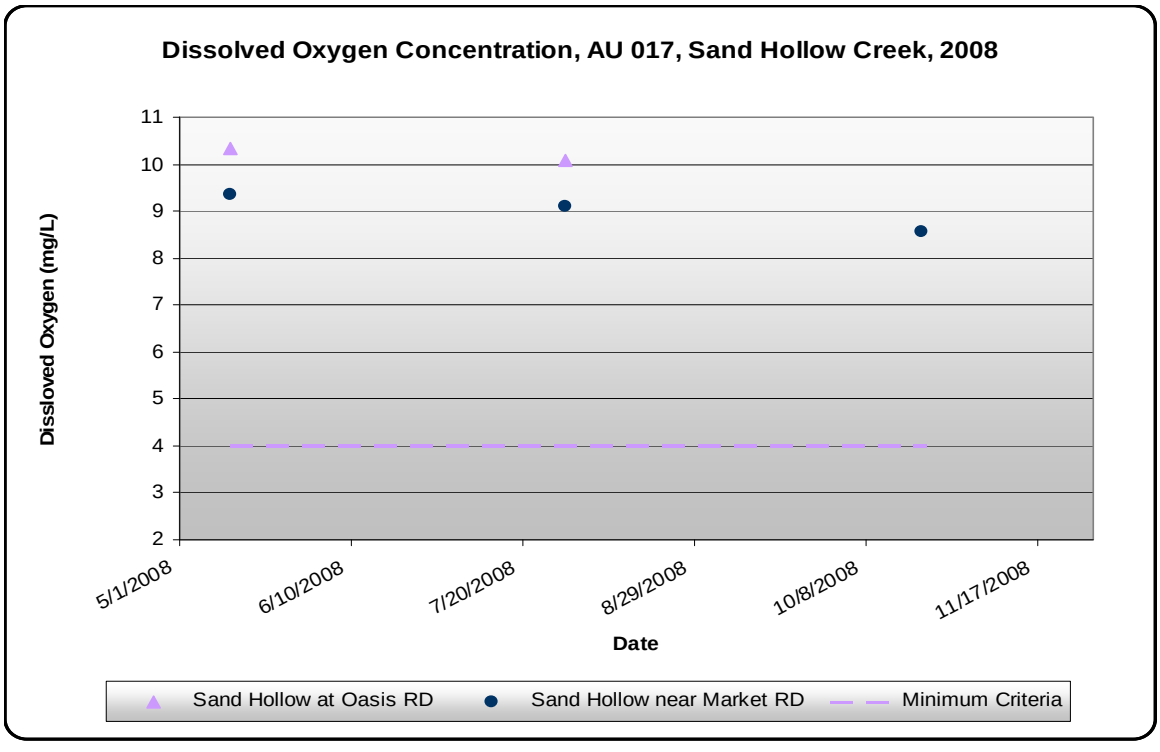


Figure C-3. Reported results of dissolved oxygen (DO) from data collected from Sand Hollow Creek (AU 017) by DEQ, 2008.

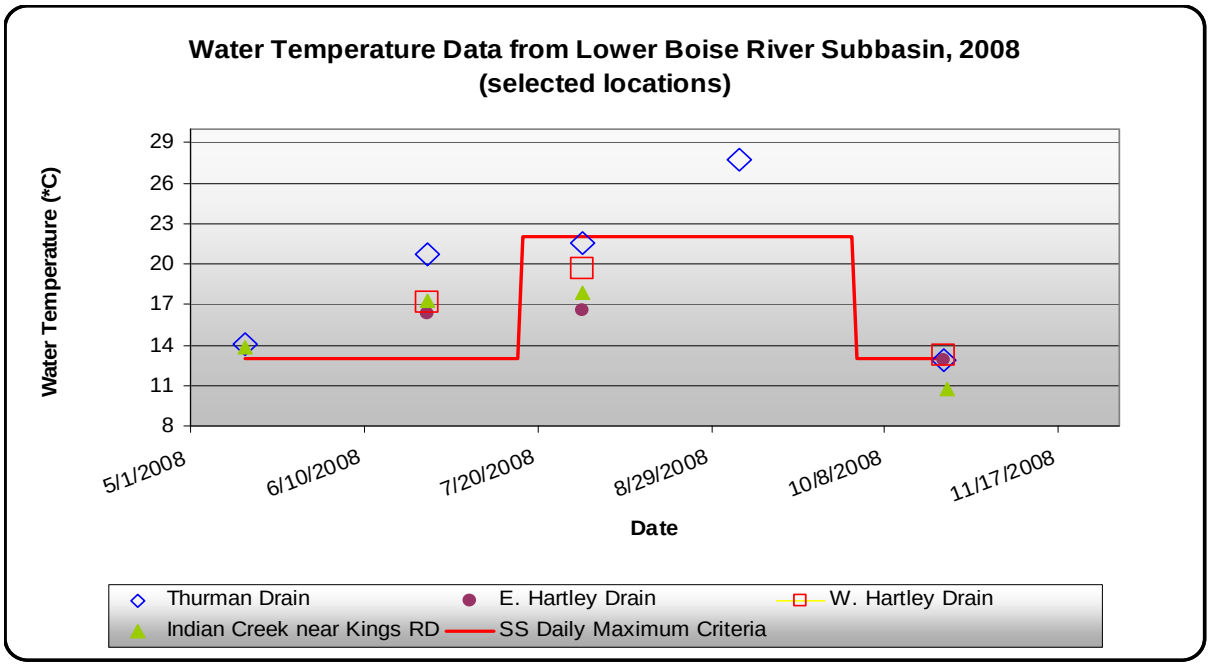


Figure C-4. Reported results of water temperature from data collected from Lower Boise River load allocation locations by DEQ, 2008.

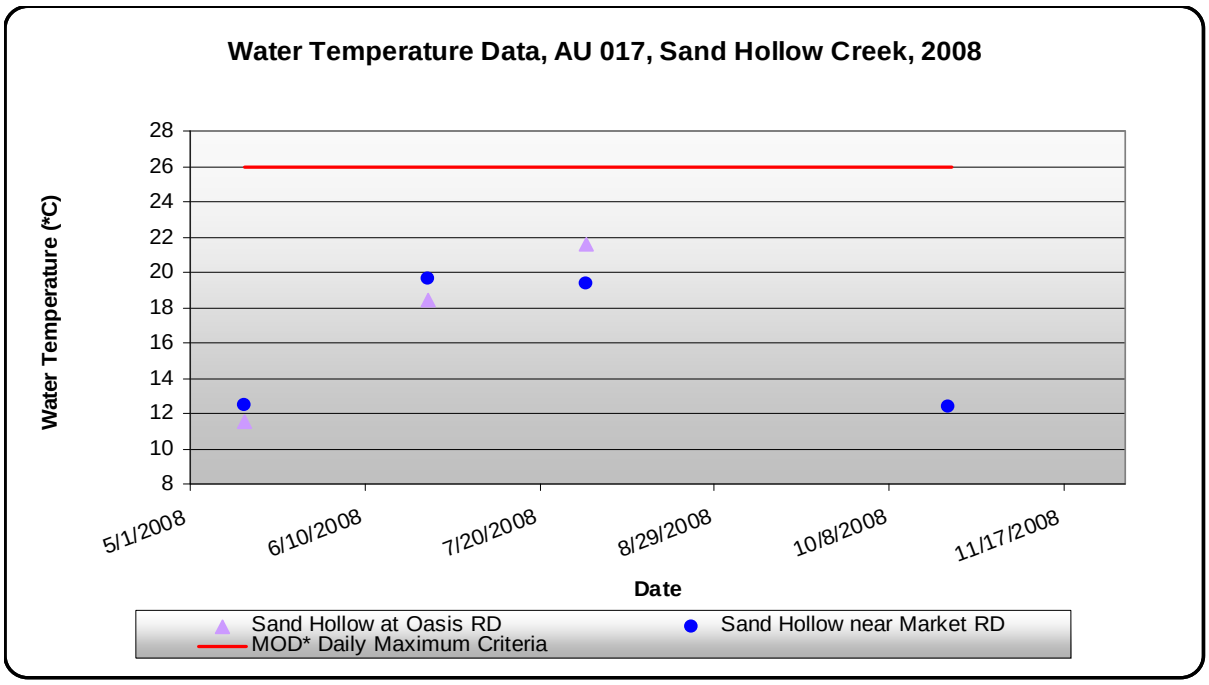


Figure C-5. Reported results of water temperature from data collected from Sand Hollow Creek (AU 017) by DEQ, 2008.

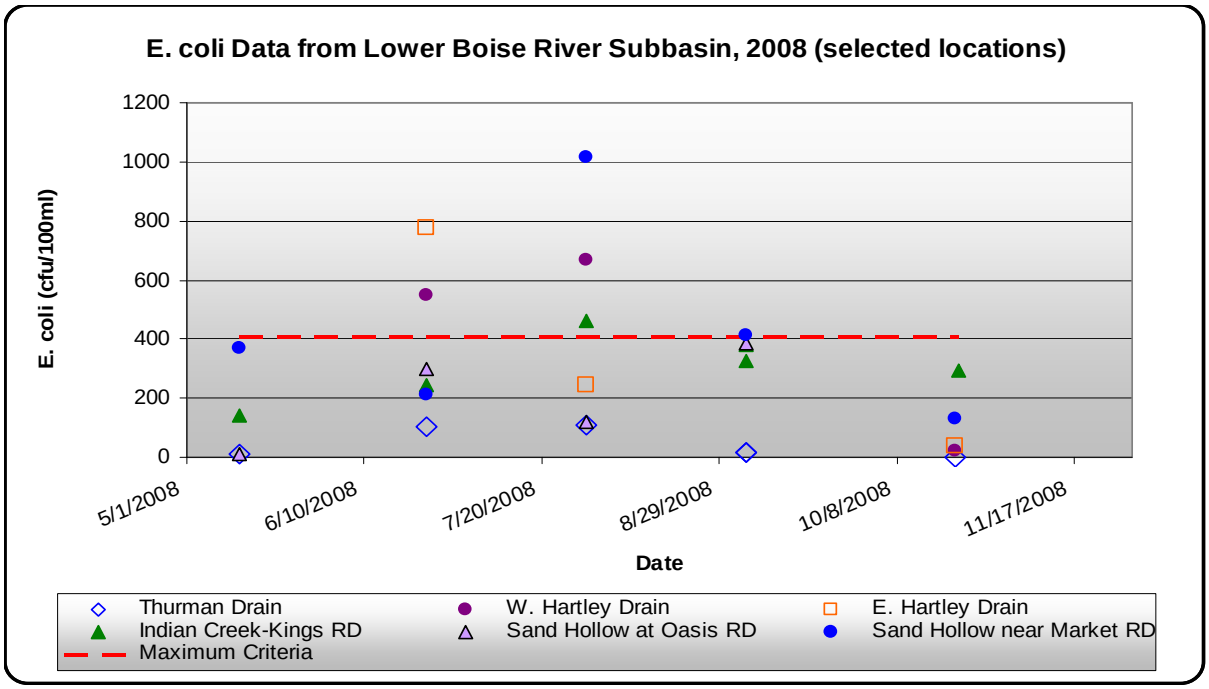


Figure C-6. Reported results of E. coli from data collected from Lower Boise River load allocation locations by DEQ, 2008.

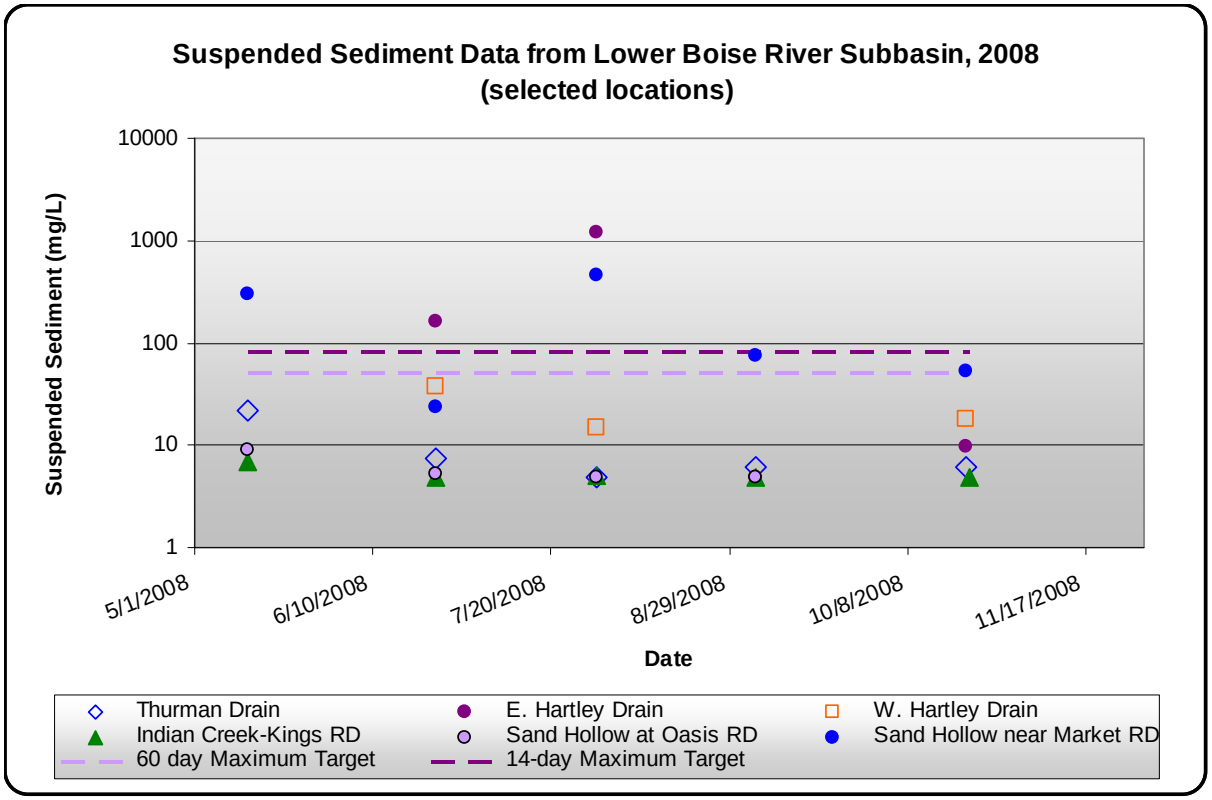


Figure C-7. Reported results of suspended sediment from data collected from Lower Boise River load allocation locations by DEQ, 2008.

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Appendix D. Designated Management Agency Reports of Implementation Activities and Effectiveness

Table D-1. Reports of nonpoint source implementation projects in the Lower Boise River subbasin. Received from Idaho Soil Conservation Commission (ISCC) May 29, 2008.

Summary of Actual Best Management Practice (BMP) Expenditures

CANYON SCD *HUC: 17050114*

Best Management Practice:	*Amount Installed:*	*Total BMP Costs:*	*Operator Funds:*	*State Matching:*	*Other Monies:*	*Acres Treated:*	*----------Units Counted (E)----------*		
							Acres	*Riparian Feet*	*AFO (Head)*
Overall Summary of Best Management Practices GRANTS 17050114									
PIPELINE – HIGH PRESS.	3235 FT	$25,411	$14,174	$11,237	$0	0	0	0	
PIPELINE – LOW PRESS.	40 FT	$4,971	$2,485	$2,485	$0	0	0	0	
GATED PIPELINE	10391 FT	$68,039	$36,378	$31,661	$0	227	227	0	0
LAND SMOOTHING	15 AC	$9,110	$5,399	$3,711	$0	15	0	0	0
PASTURE & HAYLAND PLANTING	20 AC	$1,622	$811	$811	$0	20	20	0	0
STRUCTURE FOR WATER CONTROL	10 EA	$12,985	$6,492	$6,492	$0	0	0	0	
WASTE STORAGE FACILITY	1 EA	$22,580	$12,580	$10,000	$0	100	100	0	1,500
Project Total:		**$144,717**	**$78,320**	**$66,398**	**$0**	**362**	**347**	**0**	**1,500**
(A Total of 19 BMPs Recorded)		***$144,717***	***$78,320***	***$66,398***	***$0***	***362***	***347***	***0***	***1,500***

E = estimated; AFO = animal feeding operation

Summary of Actual BMP Expenditures

CANYON SCD CONWAY GULCH HUC: 17050114

Best Management Practice:	Amount Installed:	Total BMP Costs:	Operator Funds:	State Matching:	Other Monies:	Acres Treated	-----Units Counted (E)-----		
							Acres	Riparian Feet	AFO(Head)
CONSERVATION CROP ROTATION	9279 AC				$0	46,395	0	0	0
DEEP TILLAGE	655 AC				$0	655	0	0	0
FILTER STRIP	150 AC				$0	150	0	0	0
CONCRETE DITCH	29256 FT				$0		0	0	0
PIPELINE – HIGH PRESS.	7574 FT				$0		0	0	0
PIPELINE – LOW PRESS.	59535 FT				$0		0	0	0
IRRIGATION SYSTEM, SPRINKLER	1425 AC				$0	14,250	0	0	0
IRRIG. SYSTEM, SURFACE & SUBSURFACE	470 AC				$0	470	0	0	0
IRRIGATION WATER MANAGEMENT	9279 AC	$1,263,085	$607,029	$656,056	$0	46,395	9,279	0	0
LAND SMOOTHING	716 AC				$0	7,160	0	0	0
MULCHING	923 AC				$0	4,615	0	0	0
RESIDUE MANAGEMENT; MULCH TILL	6565 AC				$0	6,565	0	0	0
SEDIMENT BASIN	42 EA					$0	0	0	0
STRUCTURE FOR WATER CONTROL	86 EA					$0	0	0	0
UNDERGROUND OUTLET	2773 FT					$0	0	0	0
Project Total:		***$1,263,085***	***$607,029***	***$656,056***	***$0***	***126,655***	***9,279***	***0***	***0***

E = estimated; AFO = animal feeding operation

Summary of Actual BMP Expenditures

CANYON SCD Dixie Slough WQPA HUC: 17050114

Best Management Practice:	Amount Installed:	Total BMP Costs:	Operator Funds:	State Matching:	Other Monies:	Acres Treated:	----Units Counted (E)--- Acres	Riparian Feet	AFO (Head)
CONSERVATION CROP ROTATION	342.3 AC	$8,535	$8,535	$0	854	70	0	0	
FENCE	2800 FT	$3,444	$861	$2,583	$0	29	29	0	40
FILTER STRIP	0.5 AC	$47	$12	$35	$0	42	0	0	0
CONCRETE DITCH	13431 FT	$97,250	$25,242	$72,008	$0	290	81	0	0
PIPELINE – CORR. METAL	255 FT	$2,615	$776	$1,839	$0	0	0	0	
PIPELINE – HIGH PRESS. UND. PLASTIC	450 FT	$4,706	$1,441	$3,265	$0	0	0	0	
PIPELINE – LOW PRESS. UND. PLASTIC	13304 FT	$145,150	$62,130	$83,019	$0	400	26	0	0
PIPELINE - CONCRETE	1805 FT	$13,523	$3,381	$10,142	$0	0	0	0	
PIPELINE – REINF. PLASTIC MORTAR	3860 FT	$33,199	$20,753	$12,446	$0	0	0	0	
GATED PIPE	2040 FT	$8,881	$2,220	$6,661	$0	0	0	0	
PIPELINE - STEEL	28 FT	$381	$95	$286	$0	0	0	0	
IRRIGATION LAND LEVELING	103.4 AC	$58,500	$49,451	$9,049	$0	103	11	0	0
IRRIGATION SYSTEM, SPRINKLER	211.3 AC	$115,124	$58,671	$56,453	$0	211	211	0	0
IRRIGATION WATER MANAGEMENT	342.3 AC	$8,535	$8,535	$0	854	64	0	0	
LAND SMOOTHING	10 AC	$1,500	$1,500	$0	10	0	0	0	
NUTRIENT MANAGEMENT	342.3 AC	$8,535	$8,535	$0	854	0	0	0	
PIPELINE	3246 FT	$5,556	$1,389	$4,167	$0	0	0	0	

Best Management Practice:	Amount Installed:	Total BMP Costs:	Operator Funds:	State Matching:	Other Monies:	Acres Treated:	----Units Counted (E)--- Acres	Riparian Feet	AFO (Head)
PUMPING PLANT FOR WATER CONTROL	2 EA	$14,162	$7,231	$6,932	$0	0	0	0	
SEDIMENT BASIN	15 EA	$19,067	$6,267	$12,800	$0	380	219	0	0
STRUCTURE FOR WATER CONTROL	21 EA	$35,430	$20,919	$14,511	$0	102	0	0	0
TREE/SHRUB ESTABLISHMENT	100 EA	$975	$244	$732	$0	0	0	0	
WASTE MANAGEMENT SYSTEM	2 EA	$48,128	$12,032	$36,096	$0	611	611	0	200
WATER WELL	1 EA	$15,009	$5,009	$10,000	$0	0	0	0	
WATERING FACILITY	8 EA	$5,954	$1,488	$4,465	$0	0	0	0	
WETLAND RESTORATION	1 EA	$10,282	$3,465	$6,818	$0	29	29	0	0
Project Total:	**$664,489**	**$310,181**	**$354,309**	**$0**	**4,768**	**1,352**	**0**	**240**	**0**
Overall Summary of Best Management Practices (A Total of 75 BMPs Recorded)	***$664,489***	***$310,181***	***$354,309***	***$0***	***4,768***	***1,352***	***0***	***240***	***200***

E = estimated; AFO = animal feeding operation

Summary of Actual BMP Expenditures

ADA SWCD FIFTEENMILE CREEK WQPA HUC: 17050114

Best Management Practice:	Amount Installed:	Total BMP Costs:	Operator Funds:	State Matching:	Other Monies:	Acres Treated:	--Units Counted (E)--- Acres	Riparian Feet	AFO (Head)
ANIONIC POLYACRYLAMIDE (PAM)	839 AC	$6,248	$1,621	$4,628	$0	839	100	0	0
FILTER STRIP	0.6 AC	$120	$30	$90	$0	1	1	0	0
CONCRETE DITCH-	8176 FT	$56,708	$14,604	$42,104	$0	126	76	0	0
PIPELINE – LOW PRESS. UND. PLASTIC	2891 FT	$19,672	$5,002	$14,670	$0	154	133	0	0
CONCRETE PIPELINE	1925 FT	$14,053	$3,513	$10,539	$0	0	0	0	0
GATED PIPE	990 FT	$4,693	$1,174	$3,519	$0	0	0	0	0
IRRIGATION LAND LEVELING	37885 CY	$52,769	$13,256	$39,513	$0	71	16	0	0
IRRIGATION SYSTEM, SPRINKLER	78.3 AC	$83,432	$20,998	$62,434	$0	78	78	0	0
IRRIG. SYSTEM, SURFACE & SUBSURFACE	29 AC	$14,450	$3,613	$10,838	$0	29	29	0	0
NUTRIENT MANAGEMENT	35.7 AC	$176	$44	$132	$0	36	36	0	0
NUTRIENT MANAGEMENT	13 EA	$646	$162	$485	$0	214	20	0	0
PUMPING PLANT FOR WATER CONTROL	2 EA	$17,750	$6,072	$11,678	$0	78	0	0	0
SEDIMENT BASIN	8 EA	$12,552	$3,138	$9,413	$0	81	47	0	0
STRUCTURE FOR WATER CONTROL	1 EA	$935	$298	$638	$0	0	0	0	0
Project Total:		***$284,204***	***$73,523***	***$210,680***	***$0***	***1,708***	***536***	***0***	***0***

E = estimated; AFO = animal feeding operation

Table D-2. Summary of nonpoint source implementation projects, 2005 through 2008, in the Lower Boise River subbasin, by Tier. Received from Idaho Soil Conservation Commission (ISCC) January 9, 2009.

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Dixie Slough		Irrigation System, Micro irrigation (441)	Tier 1		35.1	
Fifteen Mile Creek		Comprehensive Nutrient Management Plan	Tier 1		21.0	
Fifteen Mile Creek		Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete	Tier 1		47.0	
Fifteen Mile Creek		Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	Tier 1		38.0	
Fifteen Mile Creek		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 1		29.0	
Fifteen Mile Creek		Structure for Water Control	Tier 1		38.0	
Fifteen Mile Creek		Conservation Crop Rotation	Tier 1		143.3	
Fifteen Mile Creek		Nutrient Management	Tier 1		167.8	
Low Line Canal		Conservation Crop Rotation	Tier 1		21.9	
Low Line Canal		Irrigation System, Surface and Subsurface	Tier 1		21.9	
Low Line Canal		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 1		72.0	
Lower Indian Creek		Conservation Crop Rotation	Tier 1		107.7	
Lower Indian Creek		Irrigation System, Sprinkler	Tier 1		88.4	
Lower Indian Creek		Irrigation Water Management	Tier 1		107.7	
Lower Indian Creek		Nutrient Management	Tier 1		88.4	
Lower Indian Creek		Pest Management	Tier 1		88.4	
Lower Indian Creek		Residue Management, Seasonal	Tier 1		19.3	
Lower Indian Creek		Structure for Water Control	Tier 1		31.2	
Lower Indian Creek		Surface Roughening	Tier 1		19.3	
Mason Creek		Irrigation Water Conveyance, Pipeline, Steel	Tier 1		88.3	
Mason Creek		Irrigation Water Management	Tier 1		130.5	
Mason Creek		Nutrient Management	Tier 1		130.5	
Mason Creek		Residue Management, Seasonal (344)	Tier 1		130.5	
Outlet Boise River		Comprehensive Nutrient Management Plan	Tier 1		29.8	
Outlet Boise River		Conservation Crop Rotation (328)	Tier 1		80.6	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Outlet Boise River		Irrigation Land Leveling (464)	Tier 1		67.8	
Outlet Boise River		Irrigation System, Sprinkler	Tier 1		51.1	
Outlet Boise River		Irrigation System, Surface and Subsurface (443)	Tier 1		67.8	
Outlet Boise River		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD)	Tier 1		48.9	
Outlet Boise River		Irrigation Water Conveyance, Pipeline, Steel	Tier 1		13.3	
Outlet Boise River		Irrigation Water Management (449)	Tier 1		80.6	
Outlet Boise River		Nutrient Management (590)	Tier 1		80.6	
Outlet Boise River		Pumping Plant (533)	Tier 1		41.9	
Outlet Boise River		Structure for Water Control	Tier 1		41.8	
Outlet Boise River		Wetland Restoration	Tier 1		13.3	
Upper Indian Creek		Structure for Water Control (587)	Tier 1		6.8	
Tier I Total Acres					**2,289.5**	
Dixie Slough		Irrigation System, Micro irrigation (441)	Tier 2		64.1	
Dixie Slough		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	Tier 2		33.1	
Dixie Slough		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 2		23.1	
Dixie Slough		Structure for Water Control	Tier 2		33.1	
Fifteen Mile Creek		Conservation Crop Rotation	Tier 2		101.7	
Low Line Canal		Conservation Crop Rotation (328)	Tier 2		43.2	
Low Line Canal		Irrigation Water Management (449)	Tier 2		23.7	
North Indian Creek		Conservation Crop Rotation	Tier 2		27.0	
North Indian Creek		Irrigation Water Management	Tier 2		27.0	
North Indian Creek		Residue Management, Seasonal	Tier 2		27.0	
North Indian Creek		Surface Roughening	Tier 2		27.0	
Outlet Boise River		Conservation Crop Rotation (328)	Tier 2		49.2	
Outlet Boise River		Irrigation System, Micro irrigation (441)	Tier 2		35.2	
Outlet Boise River		Irrigation Water Management (449)	Tier 2		49.2	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Outlet Boise River		Nutrient Management (590)	Tier 2		49.2	
Outlet Boise River		Pumping Plant (533)	Tier 2		5.5	
Sough Slough Boise River		Anionic Polyacrylamide (PAM) Erosion Control	Tier 2		38.9	
Sough Slough Boise River		Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete	Tier 2		10.7	
Sough Slough Boise River		Irrigation Water Management	Tier 2		49.6	
Sough Slough Boise River		Pest Management	Tier 2		49.6	
South Slough Boise River		Conservation Crop Rotation	Tier 2		28.2	
South Slough Boise River		Irrigation Water Management	Tier 2		49.6	
South Slough Boise River		Pest Management	Tier 2		49.6	
Tier II Total Acres					**894.5**	
Coulee Drain Lake Lowell		Comprehensive Nutrient Management Plan (100)	Tier 3		36.2	
Coulee Drain Lake Lowell		Conservation Crop Rotation (328)	Tier 3		150.1	
Coulee Drain Lake Lowell		Diversion (362)	Tier 3		5.0	
Coulee Drain Lake Lowell		Fence (382)	Tier 3		15.2	
Coulee Drain Lake Lowell		Forage Harvest Management	Tier 3		29.2	
Coulee Drain Lake Lowell		Irrigation Regulating Reservoir	Tier 3		21.7	
Coulee Drain Lake Lowell		Irrigation System, Sprinkler	Tier 3		145.1	
Coulee Drain Lake Lowell		Irrigation System, Surface and Subsurface (443)	Tier 3		96.7	
Coulee Drain Lake Lowell		Irrigation System, Tailwater Recovery	Tier 3		21.7	
Coulee Drain Lake Lowell		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD)	Tier 3		58.7	
Coulee Drain Lake Lowell		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 3		86.4	
Mason Creek		Irrigation Water Management	Tier 3		29.2	
Coulee Drain Lake Lowell		Irrigation Water Management (449)	Tier 3		5.0	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Coulee Drain Lake Lowell		Nutrient Management	Tier 3		29.2	
Coulee Drain Lake Lowell		Pasture and Hay Planting (512)	Tier 3		8.3	
Coulee Drain Lake Lowell		Pest Management	Tier 3		6.9	
Coulee Drain Lake Lowell		Pipeline (516)	Tier 3		8.3	
Coulee Drain Lake Lowell		Pumping Plant	Tier 3		21.7	
Coulee Drain Lake Lowell		Residue Management, Seasonal (344)	Tier 3		5.0	
Coulee Drain Lake Lowell		Roof Runoff Structure (558)	Tier 3		11.9	
Coulee Drain Lake Lowell		Structure for Water Control	Tier 3		44.2	
Coulee Drain Lake Lowell		Surface Roughening (609)	Tier 3		5.0	
Coulee Drain Lake Lowell		Waste Storage Facility	Tier 3		13.8	
Coulee Drain Lake Lowell		Watering Facility (614)	Tier 3		8.3	
Coulee Drain Lake Lowell		Windbreak/Shelterbelt Establishment	Tier 3		21.7	
Currant Creek Dry Creek		Irrigation System, Sprinkler (442)	Tier 3		14.9	
Currant Creek Dry Creek		Nutrient Management (590)	Tier 3		14.9	
Eightmile Creek		Fence (382)	Tier 3		4.9	
Eightmile Creek		Irrigation System, Sprinkler	Tier 3		19.8	
Eightmile Creek		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	Tier 3		14.9	
Eightmile Creek		Irrigation Water Management (449)	Tier 3		19.8	
Eightmile Creek		Nutrient Management (590)	Tier 3		19.8	
Eightmile Creek		Pasture and Hay Planting	Tier 3		11.9	
Eightmile Creek		Prescribed Grazing (528)	Tier 3		11.9	
Eightmile Creek		Pumping Plant	Tier 3		11.9	
Eightmile Creek		Structure for Water Control	Tier 3		23.8	
Fifteen Mile Creek		Irrigation System, Sprinkler (442)	Tier 3		98.9	
Fifteen Mile Creek		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD)	Tier 3		98.9	
Fifteen Mile Creek		Nutrient Management (590)	Tier 3		17.2	
Fifteen Mile Creek		Pumping Plant (533)	Tier 3		22.8	
Fifteen Mile Creek		Structure for Water Control (587)	Tier 3		63.4	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Kuna Butte		Anionic Polyacrylamide (PAM) Erosion Control	Tier 3		76.2	
Kuna Butte		Conservation Crop Rotation (328)	Tier 3		79.9	
Kuna Butte		Irrigation System, Sprinkler	Tier 3		29.0	
Kuna Butte		Irrigation System, Surface and Subsurface	Tier 3		51.4	
Kuna Butte		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 3		23.8	
Kuna Butte		Irrigation Water Management	Tier 3		76.2	
Kuna Butte		Nutrient Management	Tier 3		65.4	
Kuna Butte		Pest Management	Tier 3		76.2	
Kuna Butte		Residue Management, Seasonal	Tier 3		76.2	
Kuna Butte		Structure for Water Control	Tier 3		8.4	
Low Line Canal		Conservation Crop Rotation (328)	Tier 3		149.0	
Low Line Canal		Irrigation System, Sprinkler	Tier 3		94.8	
Low Line Canal		Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	Tier 3		71.5	
Low Line Canal		Irrigation Water Management	Tier 3		0.8	
Lower Indian Creek		Conservation Crop Rotation (328)	Tier 3		161.3	
Lower Indian Creek		Forage Harvest Management	Tier 3		67.6	
Lower Indian Creek		Irrigation System, Sprinkler	Tier 3		33.8	
Lower Indian Creek		Irrigation System, Surface and Subsurface	Tier 3		42.3	
Lower Indian Creek		Irrigation System, Tailwater Recovery	Tier 3		33.5	
Lower Indian Creek		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	Tier 3		96.6	
Lower Indian Creek		Irrigation Water Management (449)	Tier 3		127.5	
Lower Indian Creek		Nutrient Management	Tier 3		117.7	
Lower Indian Creek		Pest Management	Tier 3		117.7	
Lower Indian Creek		Prescribed Grazing	Tier 3		12.0	
Lower Indian Creek		Pumping Plant	Tier 3		96.6	
Lower Indian Creek		Residue Management, Seasonal	Tier 3		34.6	
Lower Indian Creek		Structure for Water Control	Tier 3		33.5	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Lower Indian Creek		Surface Roughening	Tier 3		34.6	
Lower Indian Creek		Windbreak/Shelterbelt Establishment	Tier 3		33.5	
Mason Creek		Above Ground, Multi-Outlet Pipeline (431)	Tier 3		37.4	
Mason Creek		Comprehensive Nutrient Management Plan (100)	Tier 3		32.3	
Mason Creek		Conservation Completion Incentive First Year (CCIA)	Tier 3		32.3	
Mason Creek		Conservation Crop Rotation (328)	Tier 3		412.1	
Mason Creek		Fence (382)	Tier 3		41.5	
Mason Creek		Forage Harvest Management	Tier 3		100.8	
Mason Creek		Irrigation System, Micro irrigation	Tier 3		76.0	
Mason Creek		Irrigation System, Sprinkler (442)	Tier 3		175.8	
Mason Creek		Irrigation System, Surface and Subsurface (443)	Tier 3		142.5	
Mason Creek		Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete	Tier 3		49.7	
Mason Creek		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD)	Tier 3		151.5	
Mason Creek		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 3		51.8	
Mason Creek		Irrigation Water Conveyance, Pipeline, Steel (430FF)	Tier 3		47.0	
Mason Creek		Irrigation Water Management (449)	Tier 3		390.0	
Mason Creek		Land Smoothing (466)	Tier 3		3.4	
Mason Creek		Nutrient Management (590)	Tier 3		349.3	
Mason Creek		Pasture and Hay Planting (512)	Tier 3		63.6	
Mason Creek		Pest Management	Tier 3		333.4	
Mason Creek		Pipeline (516)	Tier 3		62.4	
Mason Creek		Prescribed Grazing	Tier 3		83.9	
Mason Creek		Pumping Plant (533)	Tier 3		121.8	
Mason Creek		Residue Management, Seasonal (344)	Tier 3		147.9	
Mason Creek		Sediment Basin (350)	Tier 3		60.5	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Mason Creek		Structure for Water Control (587)	Tier 3		182.6	
Mason Creek		Surface Roughening (609)	Tier 3		147.9	
Mason Creek		Watering Facility (614)	Tier 3		65.9	
North Indian Creek		Forage Harvest Management	Tier 3		44.9	
North Indian Creek		Irrigation Regulating Reservoir	Tier 3		33.5	
North Indian Creek		Irrigation System, Sprinkler	Tier 3		124.1	
North Indian Creek		Irrigation System, Surface and Subsurface	Tier 3		28.5	
North Indian Creek		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	Tier 3		32.4	
North Indian Creek		Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline	Tier 3		1.6	
North Indian Creek		Irrigation Water Management	Tier 3		46.7	
North Indian Creek		Nutrient Management (590)	Tier 3		44.9	
North Indian Creek		Pest Management	Tier 3		72.5	
North Indian Creek		Pipeline	Tier 3		3.5	
North Indian Creek		Prescribed Grazing	Tier 3		1.4	
North Indian Creek		Pumping Plant	Tier 3		47.4	
North Indian Creek		Structure for Water Control	Tier 3		60.0	
North Indian Creek		Windbreak/Shelterbelt Establishment	Tier 3		18.2	
Outlet Boise River		Above Ground, Multi-Outlet Pipeline (431)	Tier 3		39.7	
Outlet Boise River		Comprehensive Nutrient Management Plan	Tier 3		29.8	
Outlet Boise River		Conservation Completion Incentive First Year	Tier 3		21.4	
Outlet Boise River		Conservation Completion Incentive First Year (CCIA)	Tier 3		29.8	
Outlet Boise River		Conservation Crop Rotation (328)	Tier 3		328.7	
Outlet Boise River		Irrigation System, Micro irrigation (441)	Tier 3		66.8	
Outlet Boise River		Irrigation System, Sprinkler (442)	Tier 3		180.4	
Outlet Boise River		Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD)	Tier 3		53.4	
Outlet Boise River		Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	Tier 3		16.2	

6th Field Subwatershed	TMDL Target	Activity	Tier Receiving Treatment	Number of Participating Producers	Acres Treated	Monitoring Period
Outlet Boise River		Irrigation Water Conveyance, Pipeline, Steel (430FF)	Tier 3		32.4	
Outlet Boise River		Irrigation Water Management (449)	Tier 3		475.1	
Outlet Boise River		Nutrient Management (590)	Tier 3		289.9	
Outlet Boise River		Pasture and Hay Planting (512)	Tier 3		10.0	
Outlet Boise River		Pest Management (595)	Tier 3		144.1	
Outlet Boise River		Prescribed Grazing (528)	Tier 3		10.0	
Outlet Boise River		Pumping Plant (533)	Tier 3		104.4	
Outlet Boise River		Structure for Water Control (587)	Tier 3		31.0	
South Slough Boise River		Anionic Polyacrylamide (PAM) Erosion Control	Tier 3		10.2	
South Slough Boise River		Irrigation Water Management	Tier 3		20.4	
South Slough Boise River		Nutrient Management	Tier 3		20.4	
South Slough Boise River		Pest Management	Tier 3		20.4	
Tier III Total Acres					**9,097.0**	
Total Acres					**12,281.0**	
%Tier I					18.6	
% Tier II					7.3	
% Tier III					74.1	

Tier I = High priority; Tier II = Medium priority; Tier III = Low priority.

Appendix E. Assessment Unit Maps

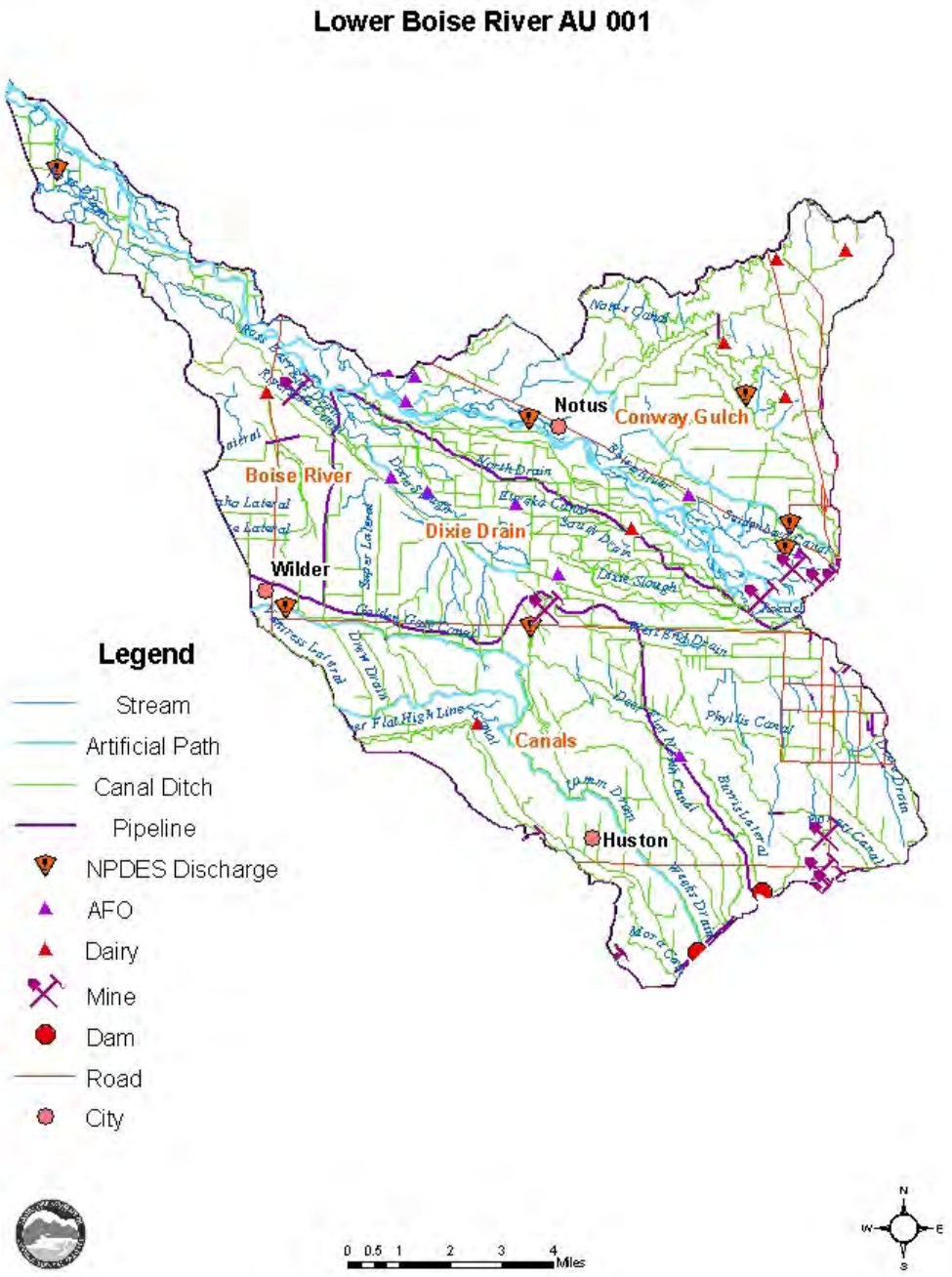


Figure E-1. Lower Boise River Assessment Unit 001(Lower Boise River from Indian Creek to the mouth), with surface water bodies and potential surface water pollutant sources.

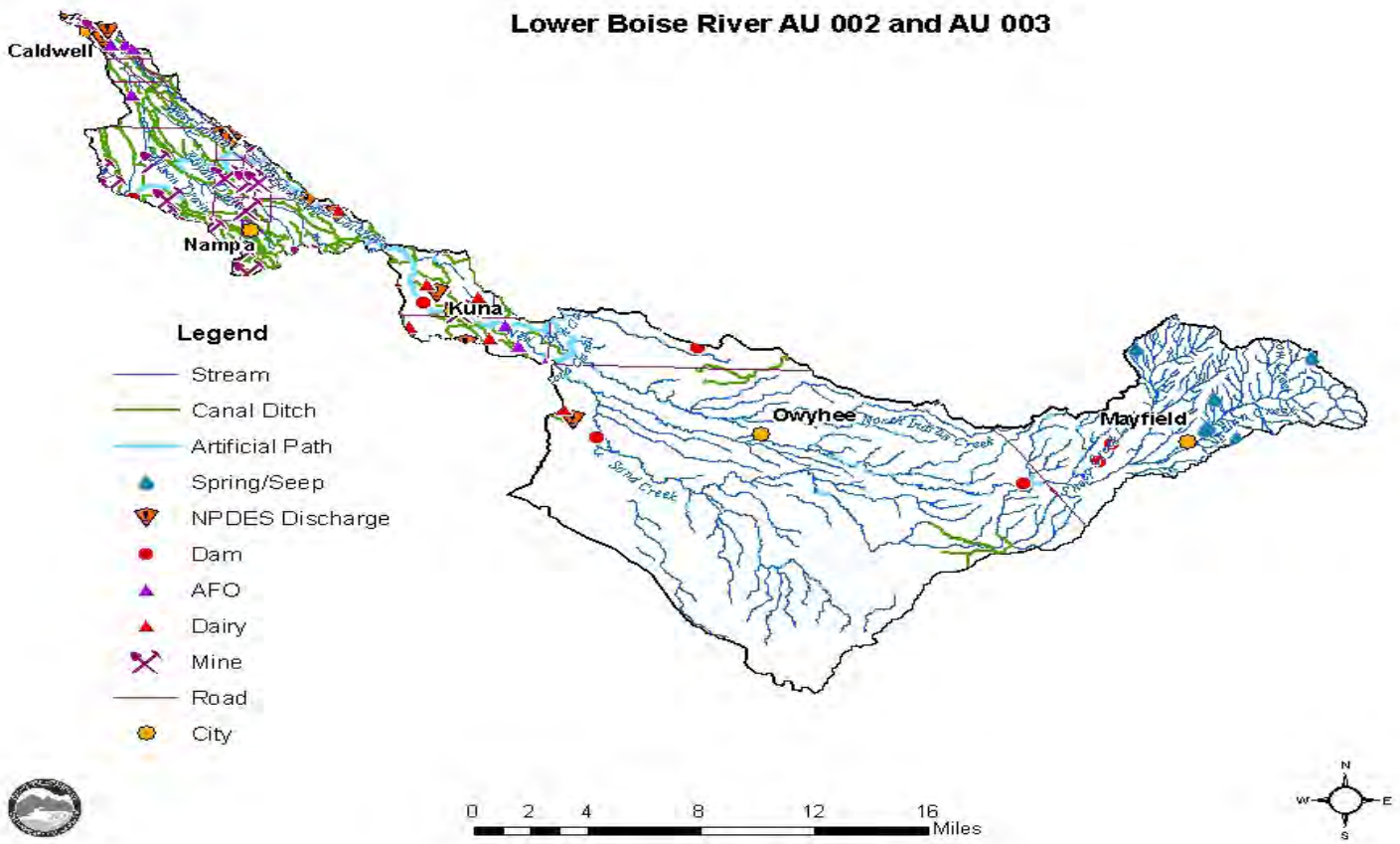


Figure E-2. Lower Boise River Assessment Unit 002 and 003 (Indian Creek), with surface water bodies and potential surface water pollutant sources.

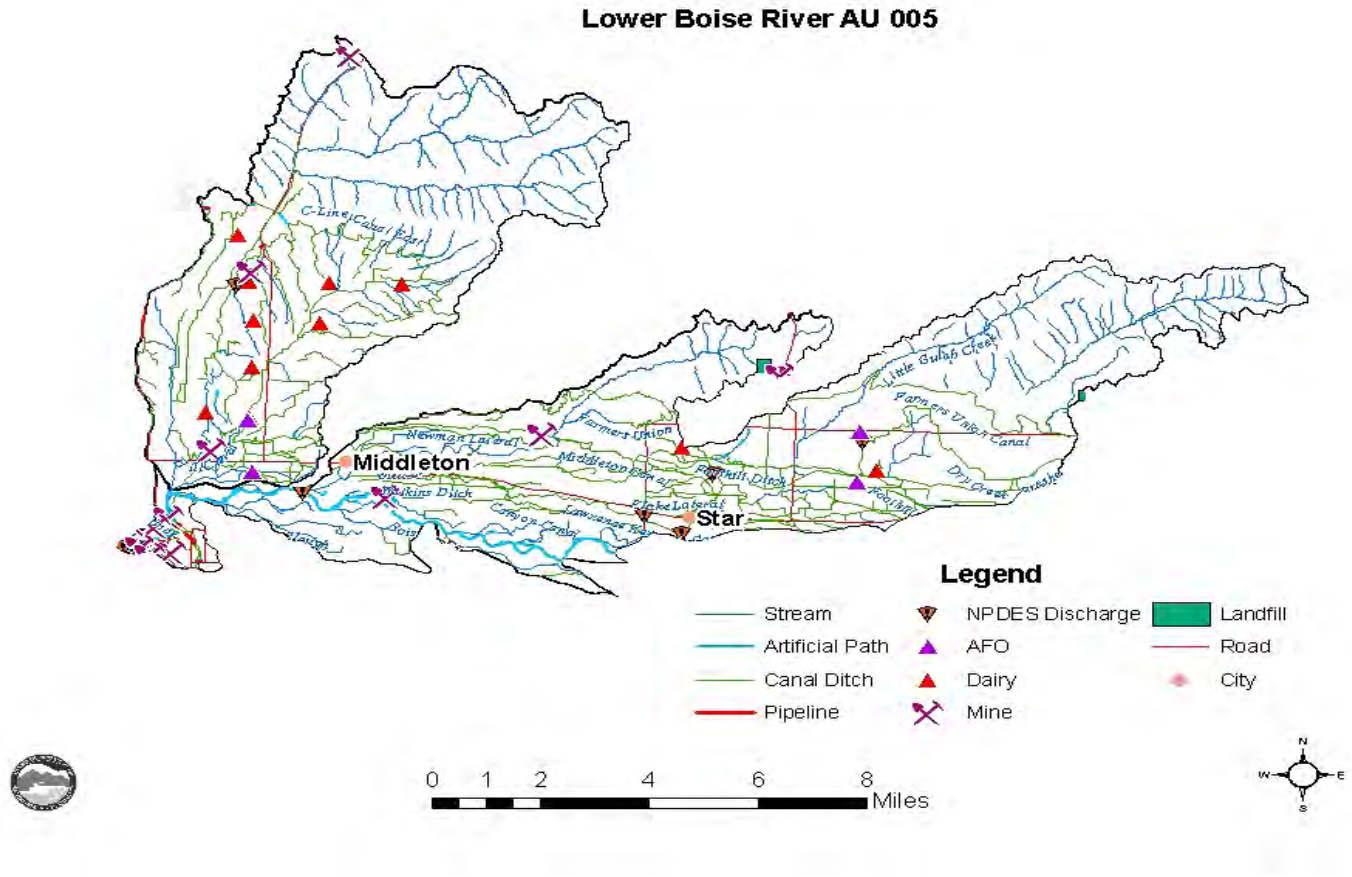


Figure E-3. Lower Boise River Assessment Unit 005 (Boise River from Glenwood Bridge to Indian Creek and Mill Slough), with surface water bodies and potential surface water pollutant sources.

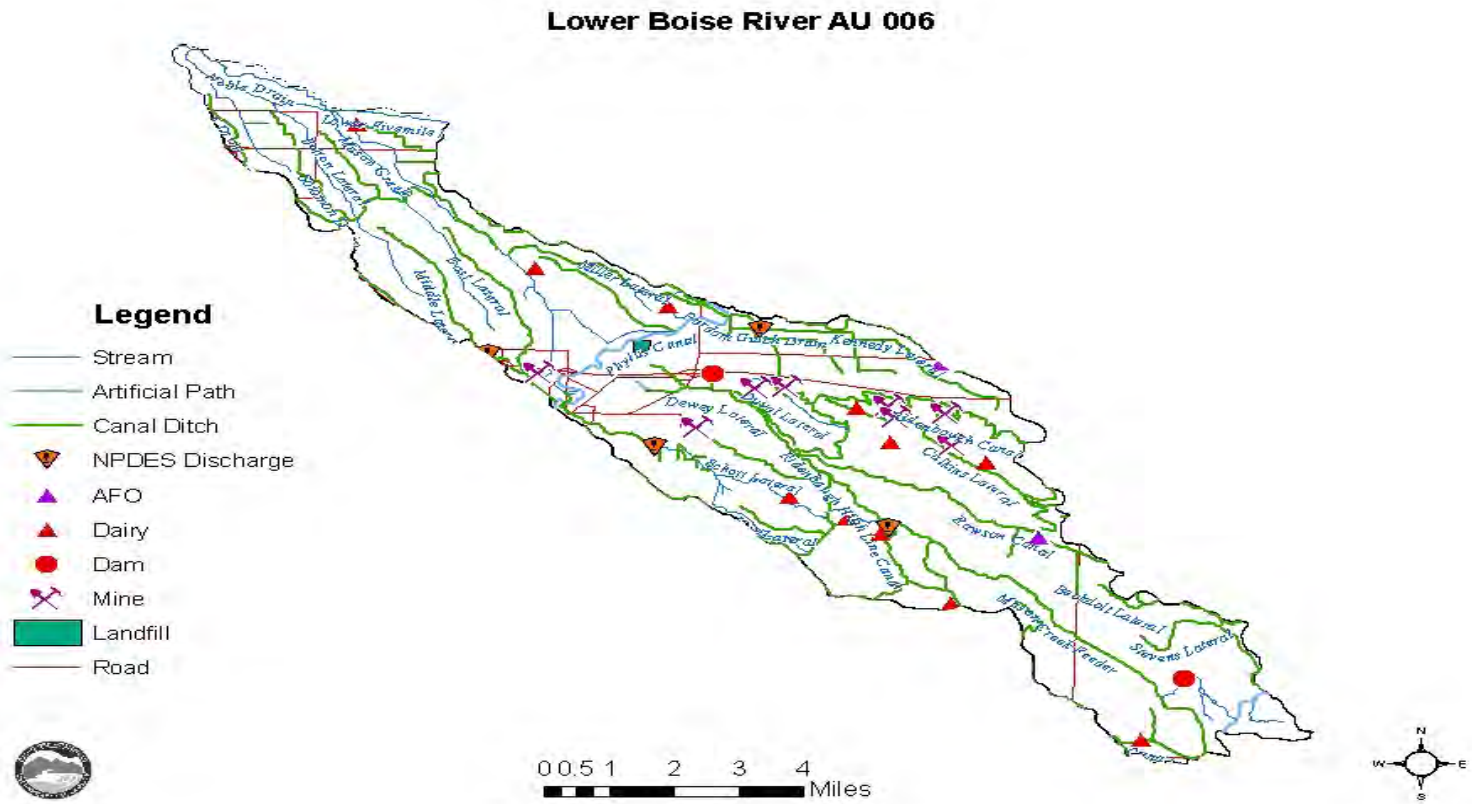


Figure E-4. Lower Boise River Assessment Unit 006 (Mason Creek), with surface water bodies and potential surface water pollutant sources.

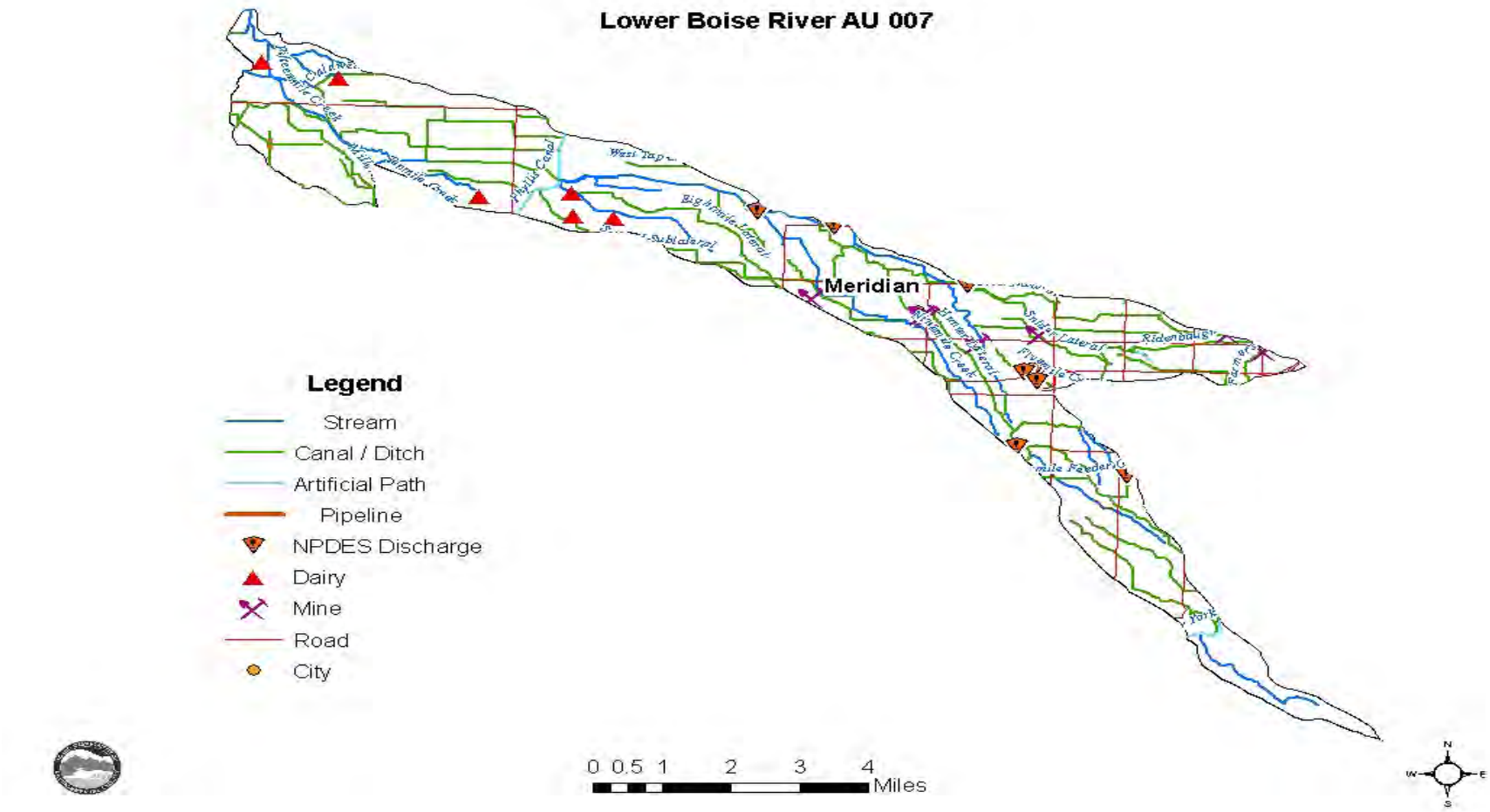


Figure E-5. Lower Boise River Assessment Unit 007 (Fifteenmile Creek), with surface water bodies and potential surface water pollutant sources.

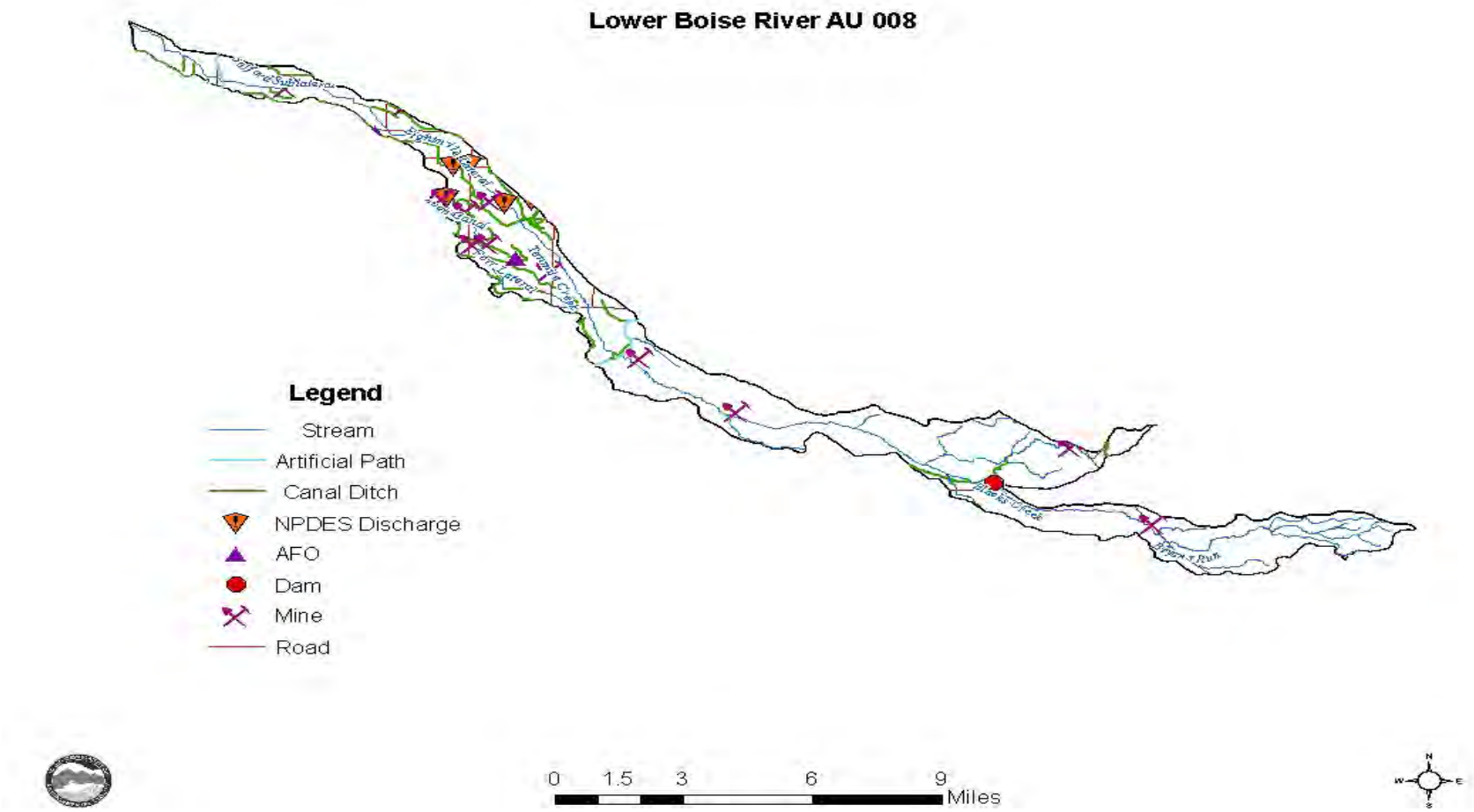


Figure E-6. Lower Boise River Assessment Unit 008 (Tenmile Creek), with surface water bodies and potential surface water pollutant sources.

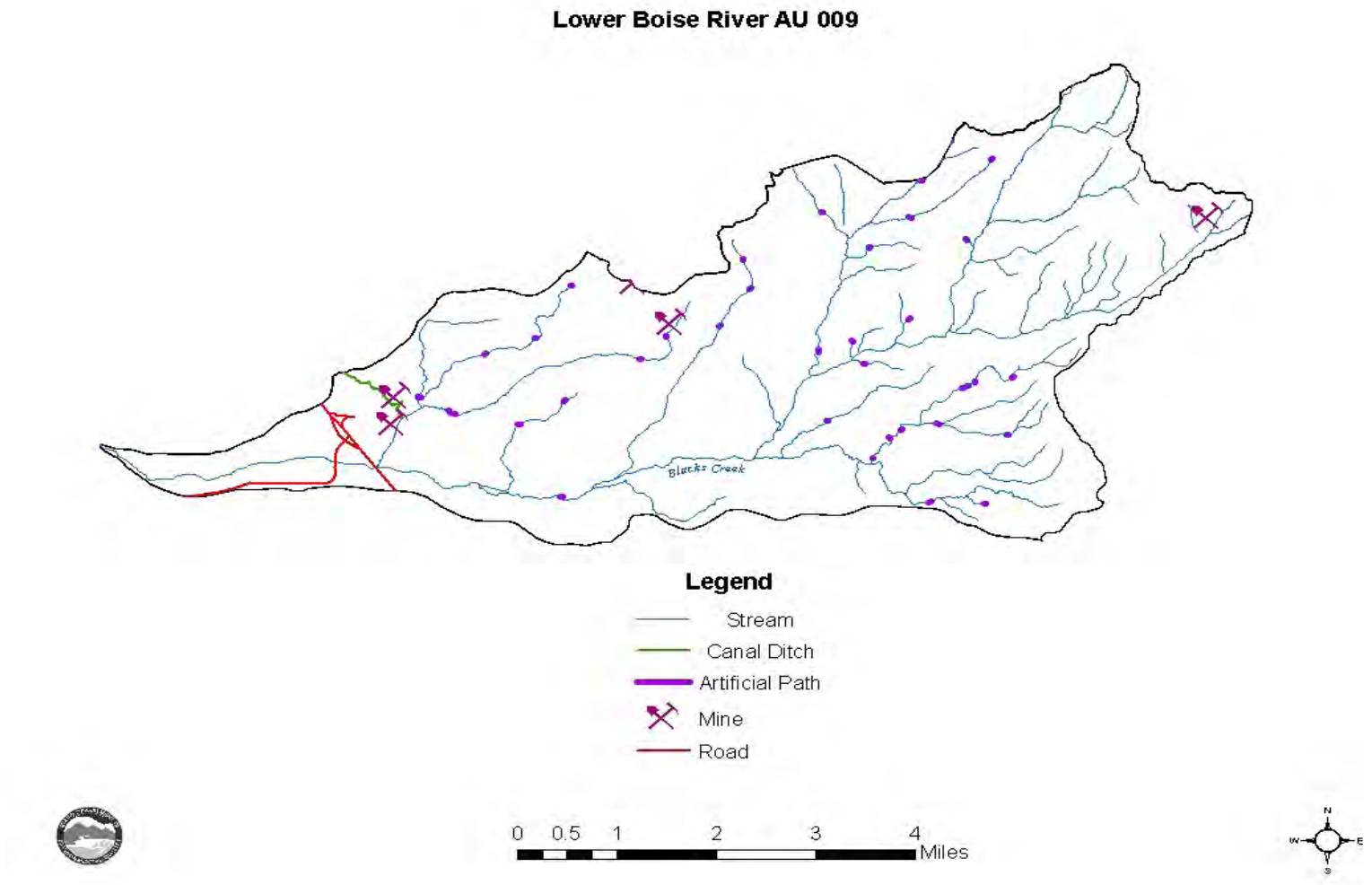


Figure E-7. Lower Boise River Assessment Unit 009 (Blacks Creek), with surface water bodies and potential surface water pollutant sources.

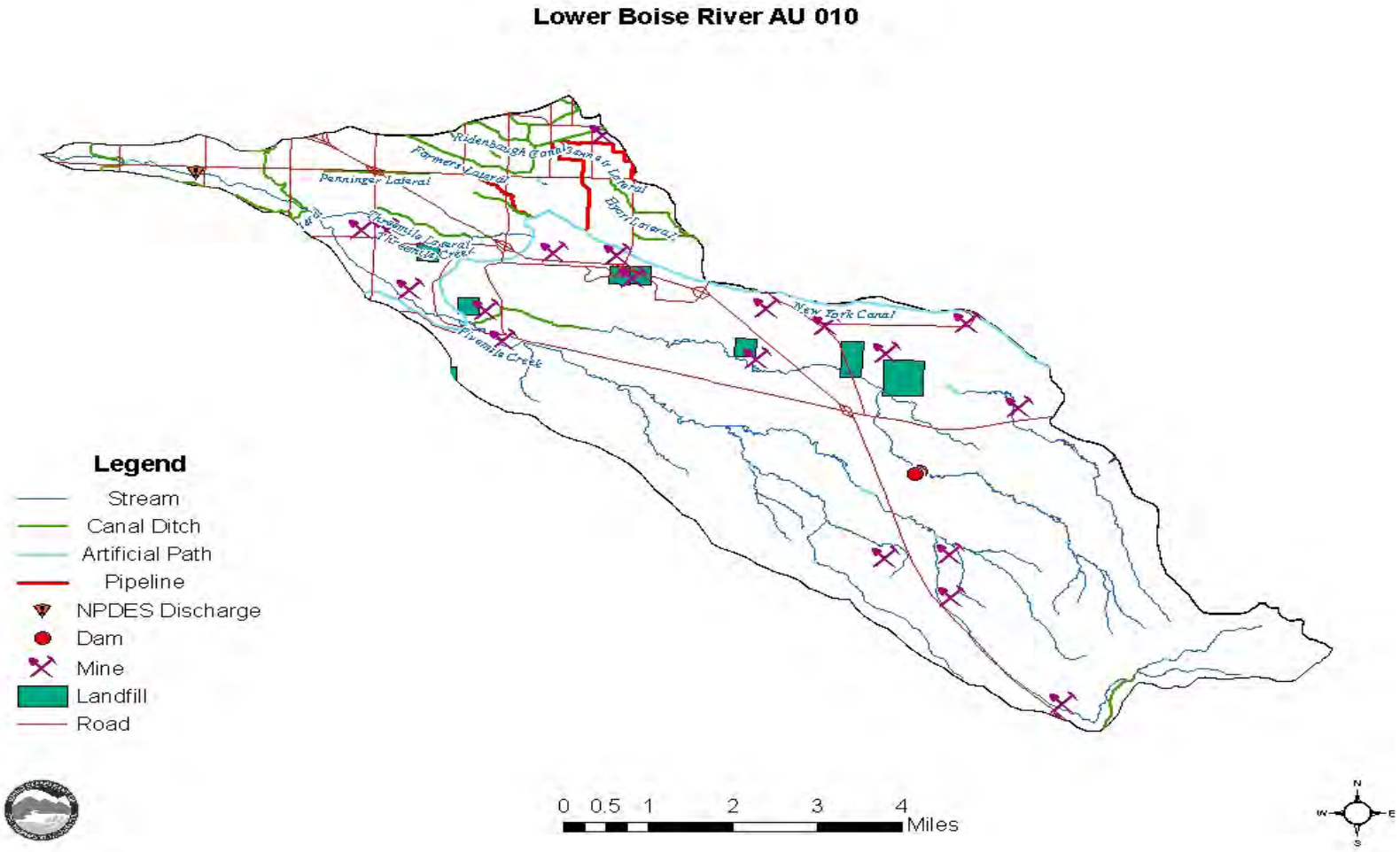


Figure E-8. Lower Boise River Assessment Unit 010 (Fivemile Creek), with surface water bodies and potential surface water pollutant sources.

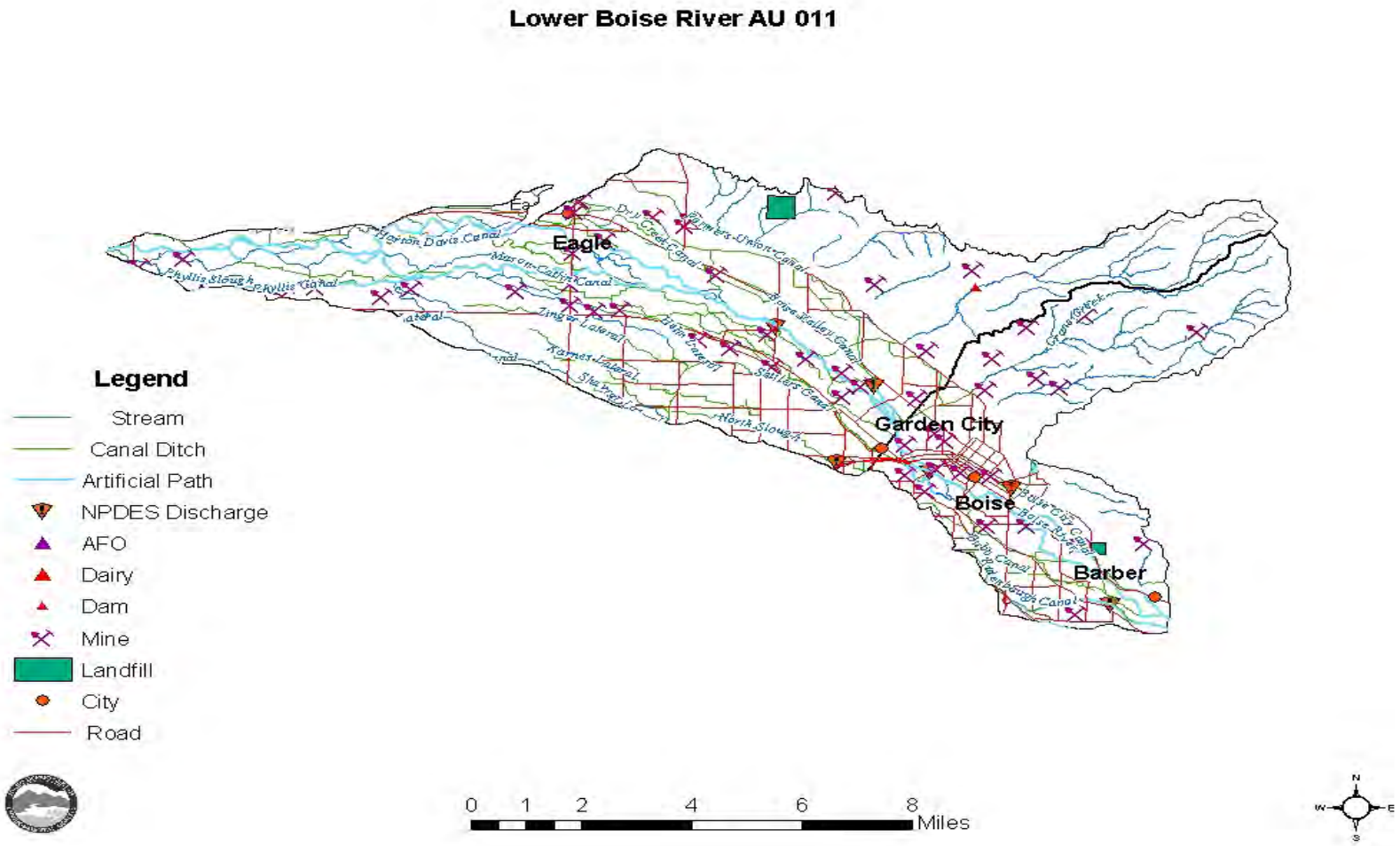


Figure E-9. Lower Boise River Assessment Unit 011 (Boise River from Lucky Peak outfall to Glenwood Bridge), with surface water bodies and potential surface water pollutant sources.

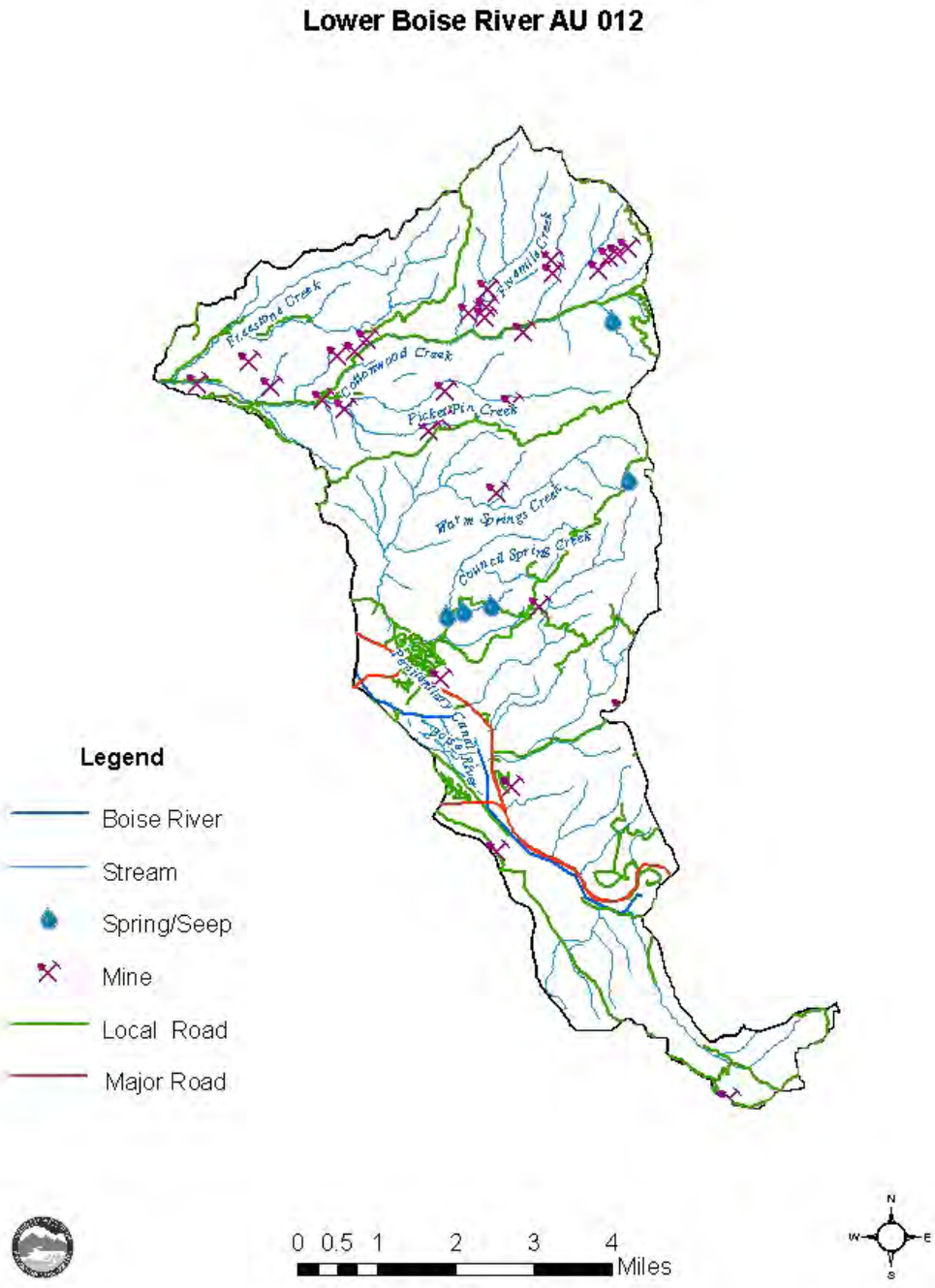


Figure E-10. Lower Boise River Assessment Unit 012 (Cottonwood Creek, and various springs) with surface water bodies and potential surface water pollutant sources.

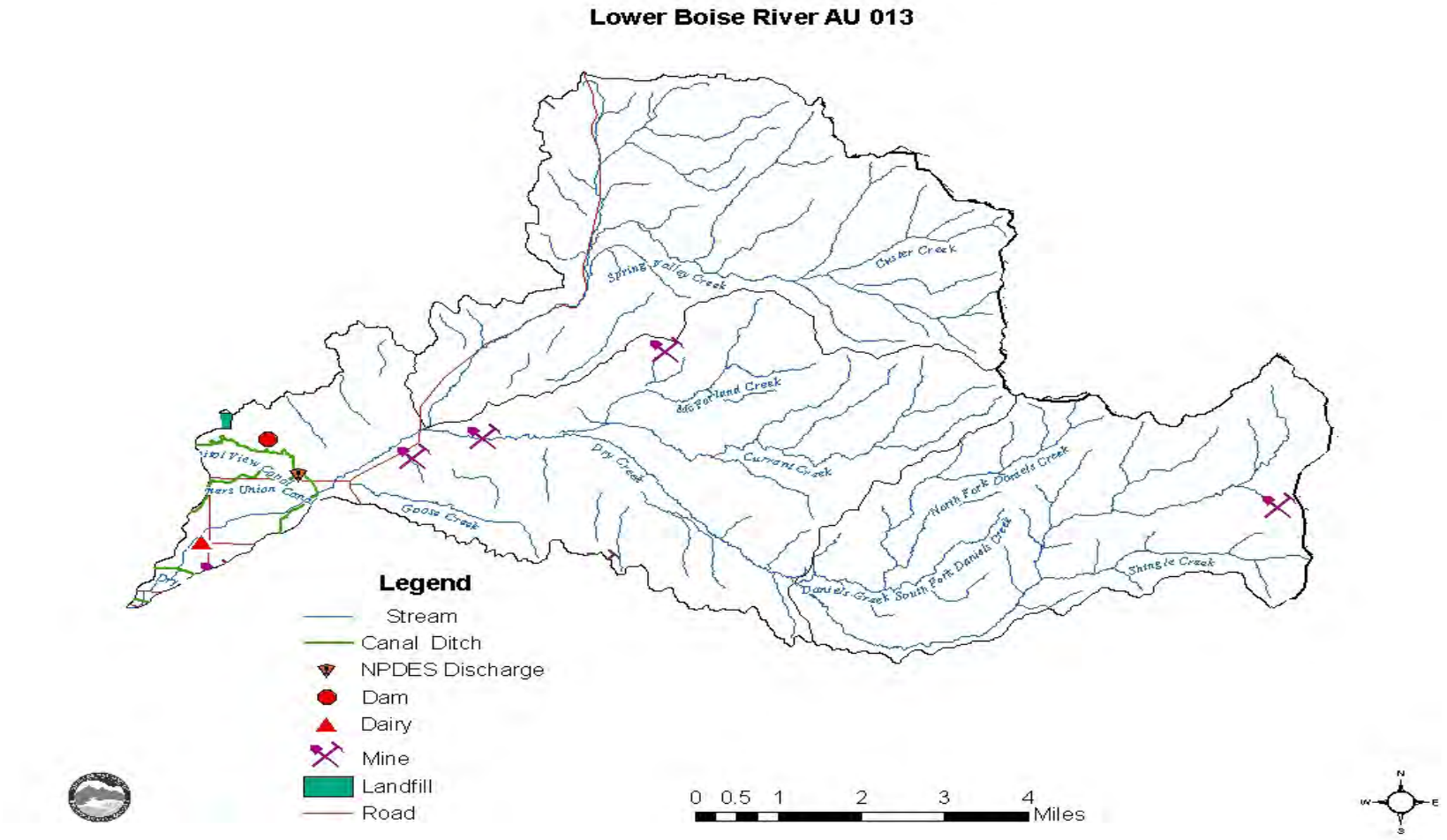


Figure E-11. Lower Boise Assessment Unit 013 (Dry Creek), with surface water bodies and potential surface water pollutant sources.

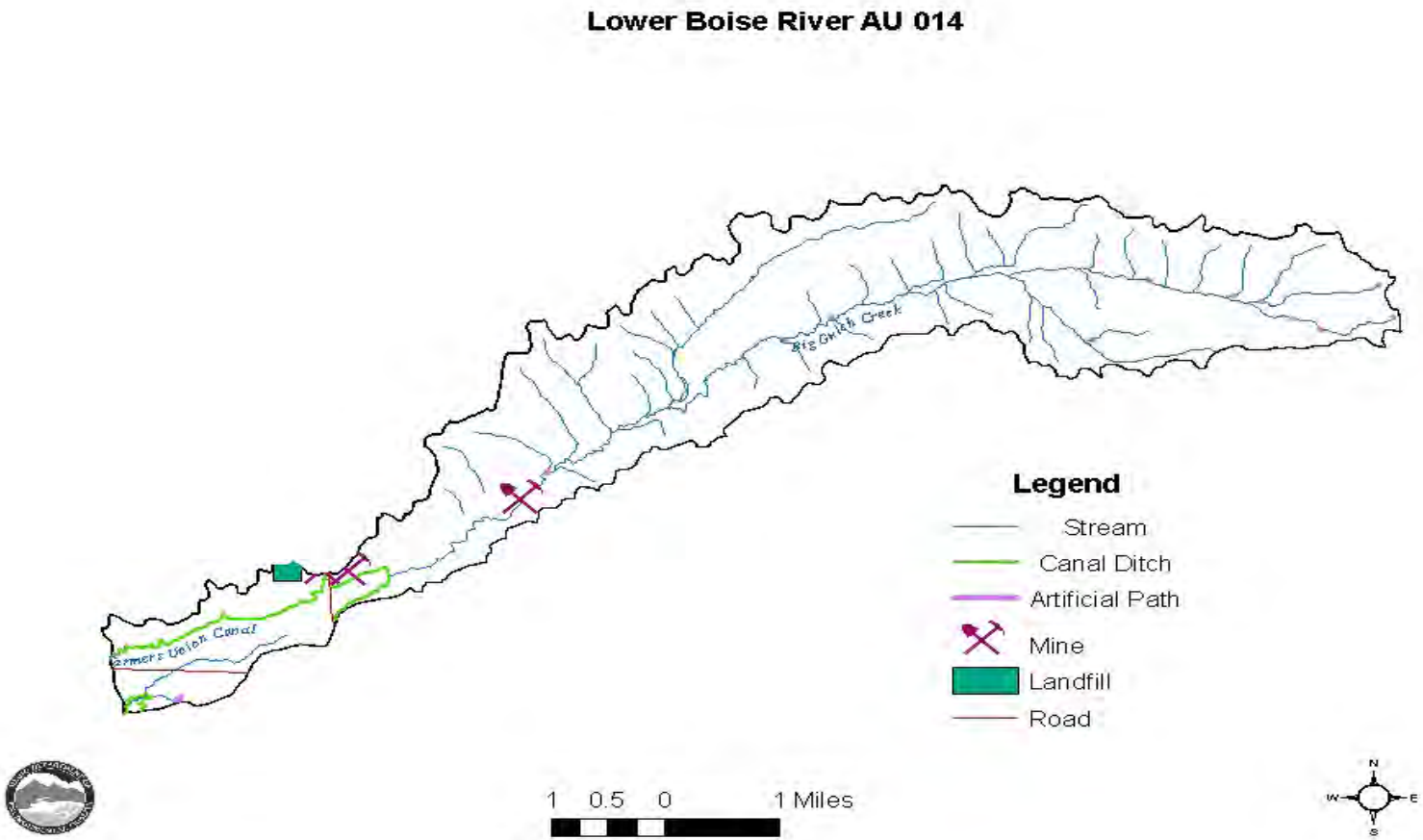


Figure E-12. Lower Boise Assessment Unit 014 (Big and Little Gulch complex), with surface water bodies and potential surface water pollutant sources.

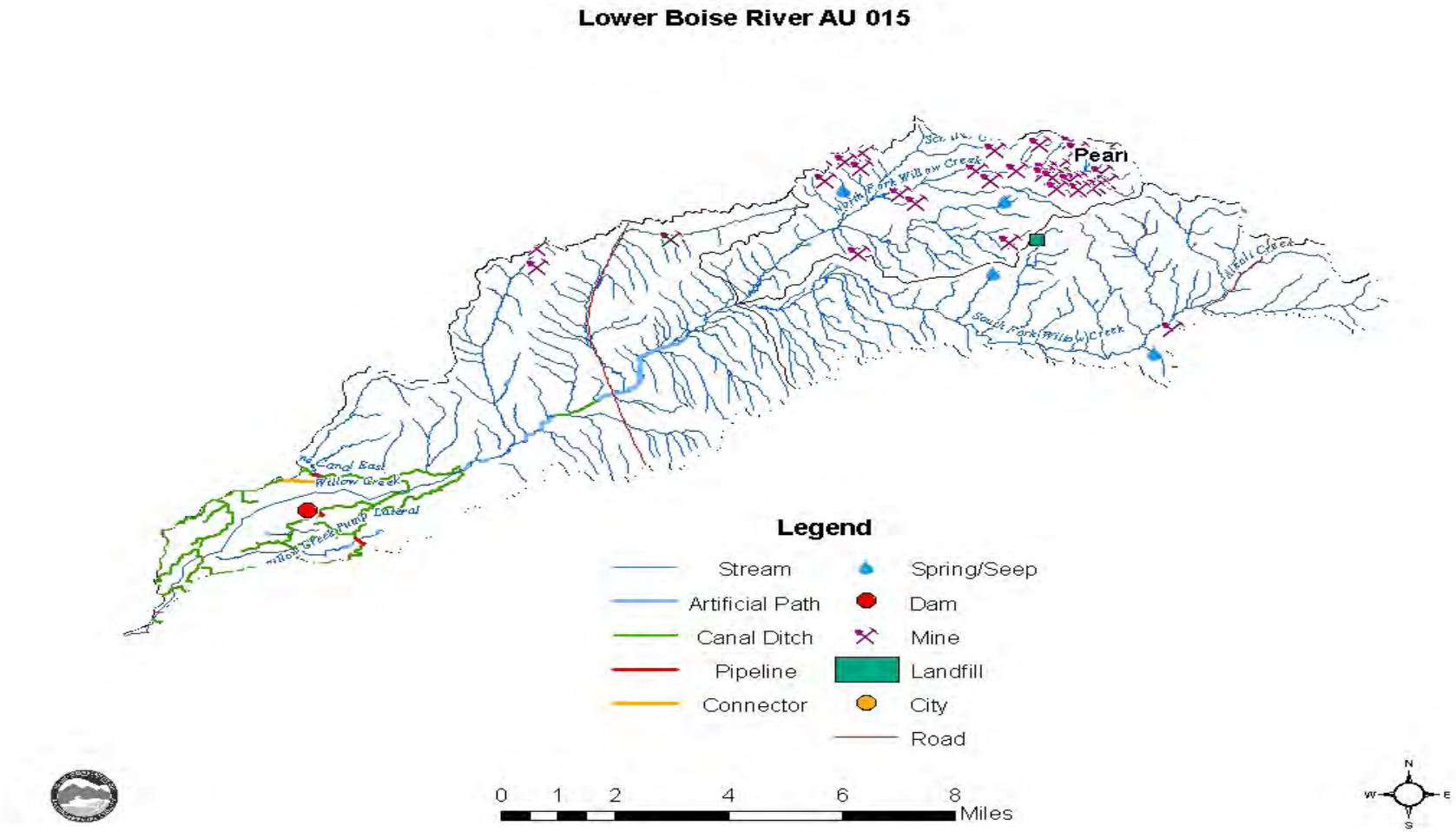


Figure E-13. Lower Boise Assessment Unit 015 (Willow Creek), with surface water bodies and potential surface water pollutant sources.

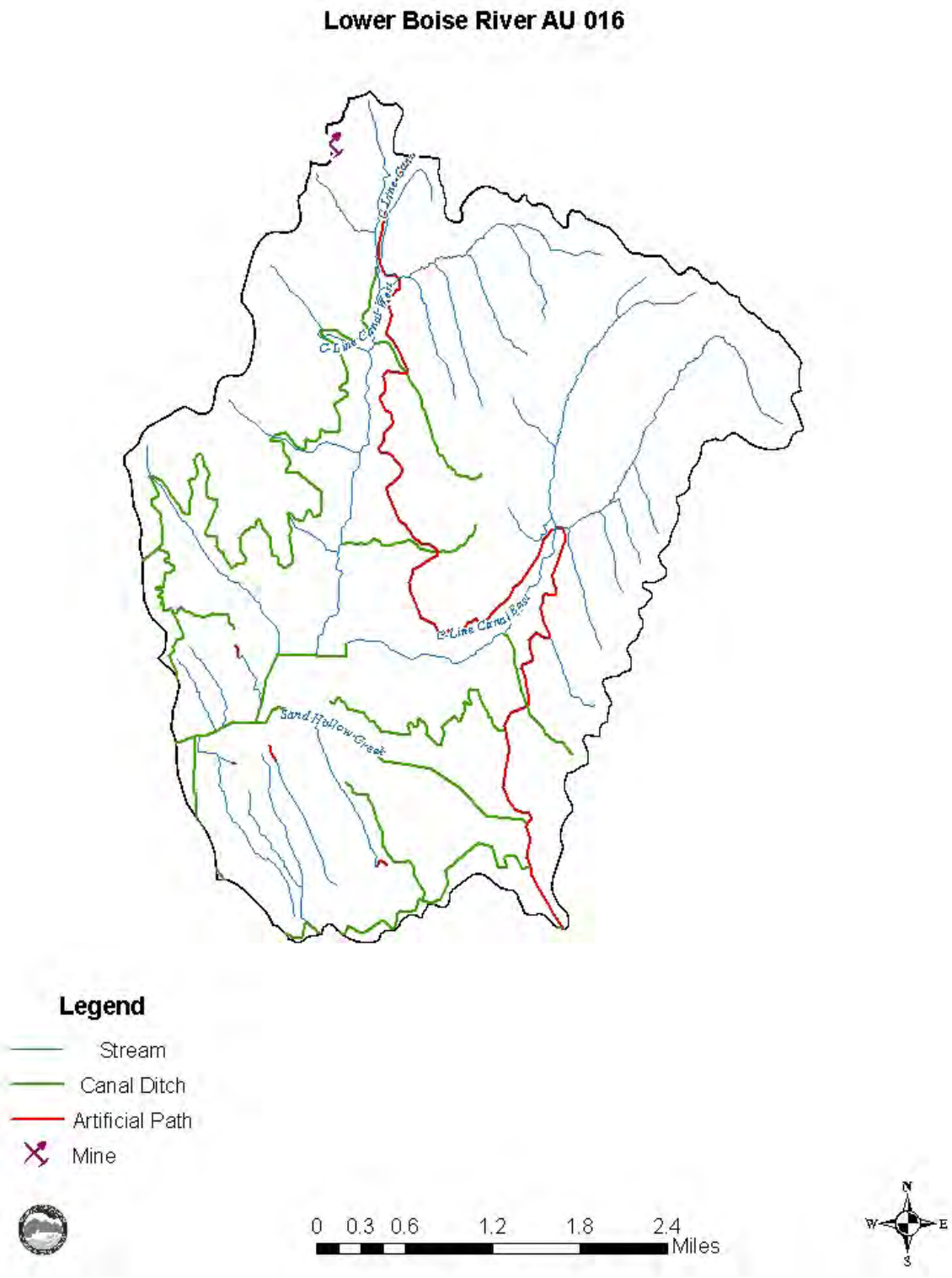


Figure E-14. Lower Boise Assessment Unit 016 (Langley/Graveyard Gulch complex), with surface water bodies and potential surface water pollutant sources.

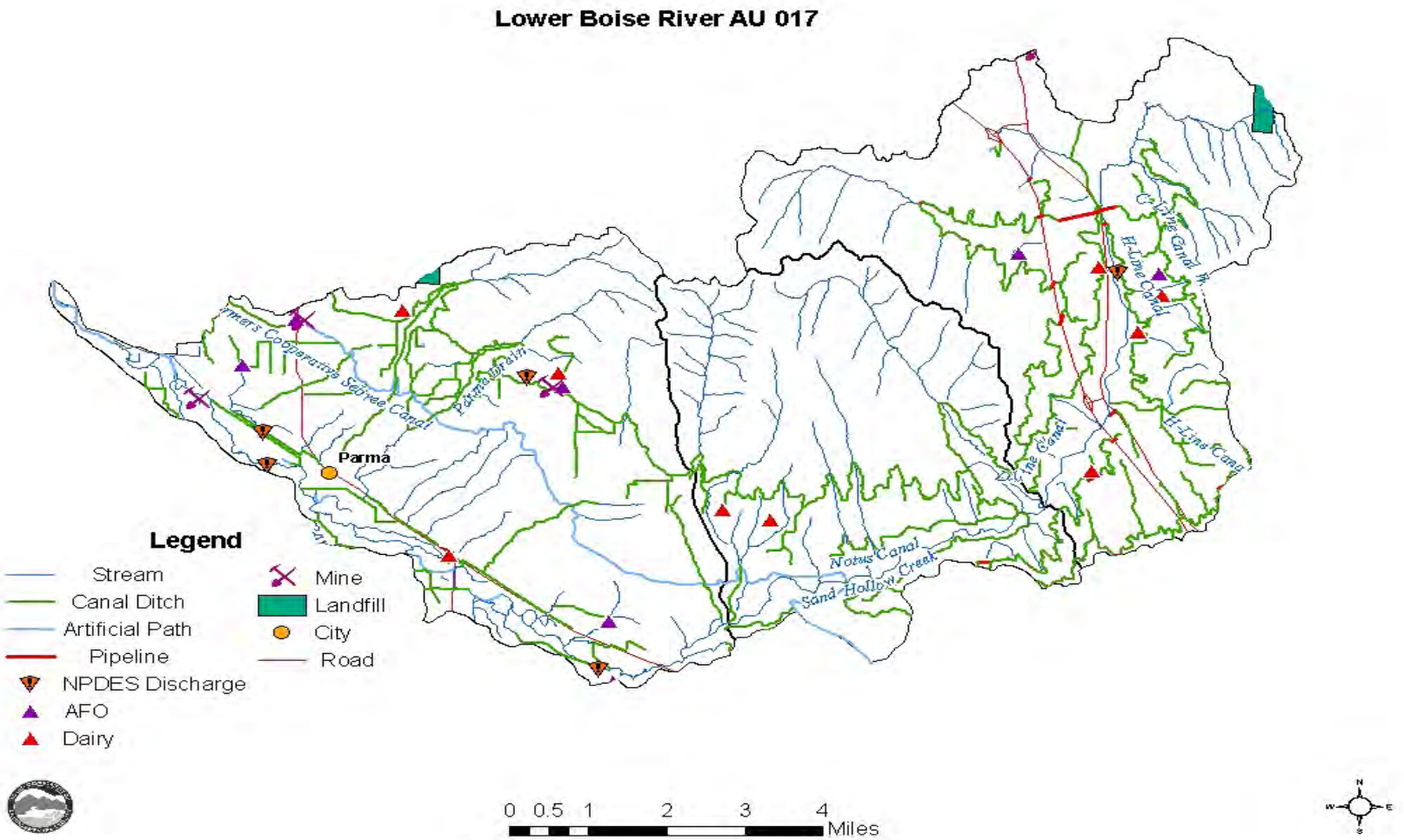


Figure E-15. Lower Boise Assessment Unit 017 (Sand Hollow Creek), with surface water bodies and potential surface water pollutant sources.