SMALL WATERSHED ROTATING BASIN MONITORING PROGRAM

BASIN GROUP 2:
UPPER NORTH CANADIAN, CIMARRON, AND UPPER ARKANSAS BASINS
SECOND CYCLE

FINAL REPORT

FY 05/06 §319(h) Task 7.6
EPA Grant C9-996100-13, Project 7

Submitted By:

Oklahoma Conservation Commission
Water Quality Division
4545 N. Lincoln Blvd., Suite 11A
Oklahoma City, OK 73105

June 2010

TABLE OF CONTENTS

LIST OF TABLES 3

LIST OF FIGURES 3

1.0 INTRODUCTION
1.1 PROJECT BACKGROUND AND DESCRIPTION 4

2.0 MATERIALS AND METHODS
2.1 GENERAL 6
2.2 WATER QUALITY MONITORING 7
2.3 BIOLOGICAL MONITORING
2.3.1 Habitat Assessment 10
2.3.2 Fish 12
2.3.3 Macroinvertebrate 14
2.4 WATERSHED ASSESSMENT 17
2.5 BENEFICIAL USE SUPPORT ASSESSMENT 17

3.0 RESULTS AND DISCUSSION
3.1 WATER QUALITY MONITORING 17
3.2 BIOLOGICAL MONITORING
3.2.1 Habitat Assessment 45
3.2.2 Fish 49
3.2.3 Macroinvertebrate 58
3.2.4 Overall Biological Assessment 65
3.3 WATERSHED ASSESSMENT 70
3.4 DESIGNATED USE SUPPORT ASSESSMENT 76

4.0 LITERATURE CITED 79

APPENDIX A WATER QUALITY DATA
A.1 Raw chemical and physical water quality data 80
A.2 Raw bacterial data. 109
A.3 Descriptive statistics by site for water quality parameters. 125
APPENDIX B FISH DATA 162
APPENDIX C MACROINVERTEBRATE DATA 186

LIST OF TABLES

Table 1. Site list for Rotating Basin Monitoring Program Group 2.2. 8
Table 2. Index of Biotic Integrity (IBI) scoring criteria for fish. 14
Table 3. Index of Biotic Integrity score interpretation for fish. 14
Table 4. Bioassessment scoring criteria for macroinvertebrates. 16
Table 5. Bioassessment score interpretation for macroinvertebrates. 16
Table 6. Mean *in-situ* water quality values for monitoring sites. 17
Table 7. Mean chemical water quality values for monitoring sites. 20
Table 8. Low dissolved oxygen values. 23
Table 9. Mean bacteria values for monitoring sites. 24
Table 10. Comparison of water quality data from previous projects to the Rotating Basin Group 2.2 project. 33
Table 11. Habitat assessment values for monitoring sites. 45
Table 12. Fish metrics for monitoring sites. 49
Table 13. IBI fish scores based on Oklahoma Fish and Wildlife Propagation biocriteria and OCC modified RBP method. 51
Table 14. Comparison of fish data from previous projects. 55
Table 15. Mean macroinvertebrate values for each monitoring site. 58
Table 16. Bioassessment score summary for macroinvertebrates. 64
Table 17. Watershed landuse for monitoring sites. 71
Table 18. Permitted landuse activity in each watershed. 74
Table 19. Beneficial use support assessment. 76

LIST OF FIGURES

Figure 1. Small Watershed Rotating Basin Monitoring Schedule and Group 2.2 Monitoring Sites. 5
Figure 2. Selected mean chemical water quality parameters by ecoregion. 27
Figure 3. Selected mean physical water quality parameters by ecoregion. 30
Figure 4. Habitat score by ecoregion. 47
Figure 5. IBI score (fish) for each site by ecoregion. 53
Figure 6. Comparison of habitat, fish, and bug scores by ecoregion. 66

1.0 INTRODUCTION

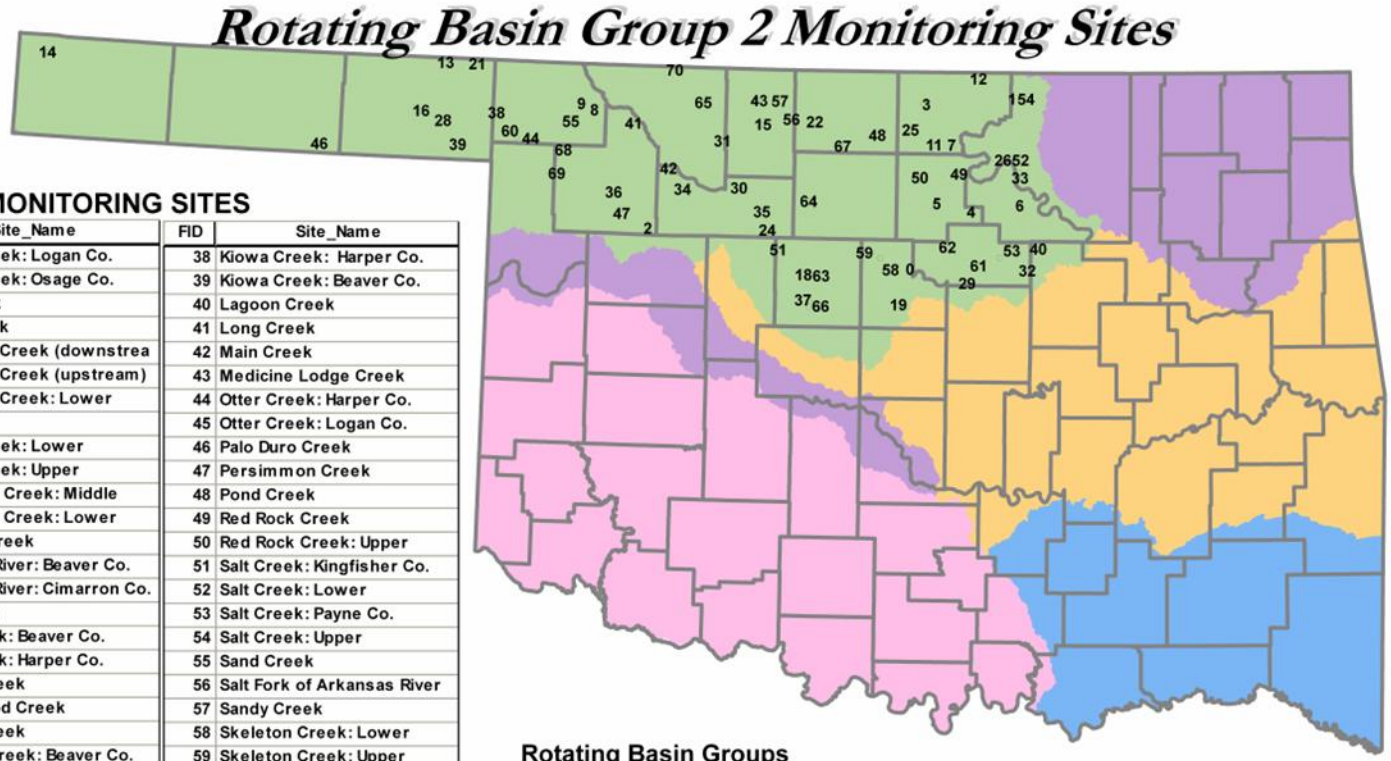
1.1 PROJECT BACKGROUND AND DESCRIPTION

The Clean Water Act has charged each state's nonpoint source (NPS) pollution agency with two primary tasks: 1) identify all waters being impacted by NPS pollution, and 2) develop a management program describing programs to be implemented to correct any identified problems. In addition, each state's NPS agency is charged with identification of all programs which are actively planning or enforcing NPS controls in order to reduce NPS pollution in cooperation with local, regional, and interstate entities. The state NPS agency can then report on total program status with regard to efforts to address NPS impacts and improve water quality. The Oklahoma Conservation Commission (OCC) is charged by Oklahoma state statute as the NPS Program technical lead and therefore must monitor to determine the occurrence, nature, and extent of NPS impacts to state waters. Robust and meaningful assessment of the state's water quality is the foundation for meeting the long-term goals of the Oklahoma NPS program and water quality management in general.

In 2000, the Oklahoma Conservation Commission (OCC) initiated a progressive ambient monitoring program to assess NPS issues on a larger spatial and temporal scale than previously done. Known as the *Small Watershed Rotating Basin Monitoring Program* ("Rotating Basin Program"), this effort entails fixed station sampling at or near the outlets of complete eleven digit Hydrologic Unit Code watersheds (HUC-11). Oklahoma contains all or part of 414 U.S. Geological Survey (USGS) 11-digit HUC basins which have been collated into eleven larger planning basins for state water quality management purposes. The sampling units for the Rotating Basin Monitoring Program are based at the outlets of HUC 11 watersheds located entirely in the state, with secondary sites located upstream in selected watersheds where isolation of a particular tributary influence is necessary. Stations are segregated into strategic basin groups and are sampled every five weeks for a period of two years. Each year, sampling is initiated in a new basin group, resulting in a statewide coverage of all sites in five years (Figure 1).

Effectively coordinated with other state monitoring programs, the OCC's Rotating Basin program is designed to accomplish the state's NPS monitoring needs in four stages. The first stage includes a comprehensive, coordinated investigation and analysis of the causes and sources of NPS pollution throughout the state—*Ambient Monitoring*. The second stage involves more intensive, specialized monitoring designed to identify specific causes and sources of NPS pollution—*Diagnostic Monitoring*. The data from diagnostic monitoring can be used to formulate an implementation plan to specifically address the sources and types of identified NPS pollution. The third stage of monitoring is designed to initiate remedial and/or mitigation efforts to address the NPS problems—*Implementation Monitoring*. Finally, the fourth stage evaluates the effectiveness of the implementation through assessment and post-implementation monitoring—*Success Monitoring*. This assessment program provides a thorough and statistically sound evaluation of Oklahoma's waters every five years, which helps focus NPS program planning, education, and implementation efforts in areas where they can be most effective.

Figure 1. Monitoring schedule and monitoring sites in "Basin Group 2" for the second cycle of the Small Watershed Rotating Basin Monitoring Project.



YEAR 2 MONITORING SITES

FID	Site_Name
0	Beaver Creek: Logan Co.
1	Beaver Creek: Osage Co.
2	Bent Creek
3	Bitter Creek
4	Black Bear Creek (downstrea
5	Black Bear Creek (upstream)
6	Black Bear Creek: Lower
7	Bois d'Arc
8	Buffalo Creek: Lower
9	Buffalo Creek: Upper
10	Chickaskia Creek: Middle
11	Chickaskia Creek: Lower
12	Chilocco Creek
13	Cimarron River: Beaver Co.
14	Cimarron River: Cimarron Co.
15	Clay Creek
16	Clear Creek: Beaver Co.
17	Clear Creek: Harper Co.
18	Cooper Creek
19	Cottonwood Creek
20	Council Creek
21	Crooked Creek: Beaver Co.
22	Sand Creek: Grant Co.
23	Dead Indian Creek
24	Deep Creek
25	Deer Creek
26	Doga Creek
27	Driftwood Creek
28	Duck Pond Creek
29	Dugout Creek
30	Eagle Chief Creek: Lower
31	Eagle Chief Creek: Woods Co.
32	Euchee Creek
33	Gray Horse Creek
34	Griever Creek
35	Indian Creek: Major Co.
36	Indian Creek: Woodward Co.
37	Kingfisher Creek

FID	Site_Name
38	Kiowa Creek: Harper Co.
39	Kiowa Creek: Beaver Co.
40	Lagoon Creek
41	Long Creek
42	Main Creek
43	Medicine Lodge Creek
44	Otter Creek: Harper Co.
45	Otter Creek: Logan Co.
46	Palo Duro Creek
47	Persimmon Creek
48	Pond Creek
49	Red Rock Creek
50	Red Rock Creek: Upper
51	Salt Creek: Kingfisher Co.
52	Salt Creek: Lower
53	Salt Creek: Payne Co.
54	Salt Creek: Upper
55	Sand Creek
56	Salt Fork of Arkansas River
57	Sandy Creek
58	Skeleton Creek: Lower
59	Skeleton Creek: Upper
60	Spring Creek
61	Stillwater Creek: Lower
62	Stillwater Creek: Upper
63	Turkey Creek: Lower
64	Turkey Creek: Upper
65	Turkey Creek: Woods Co.
66	Uncle John's Creek
67	Wild Horse Creek
68	Wolf Creek: Lower
69	Wolf Creek: Upper
70	Yellowstone Creek

OKLAHOMA CONSERVATION COMMISSION

The Small Watershed Rotating Basin Monitoring Program considers the following specific questions in the context of Oklahoma Water Quality Standards and Use Support Assessment Protocols (USAPs) in addressing NPS pollution:

1. Which HUC 11 waterbodies are not-supporting assigned beneficial uses due to NPS or NPS plus point source (PS) pollution?
2. Which waterbodies show elevated or increasing levels of NPS or NPS plus PS pollutants, which may threaten water quality?
3. What are the sources and magnitude of pollution loading within threatened or impaired waterbodies?
4. Which land uses or changes in land use are sources or potential sources for pollutants causing beneficial use impairment?

In its entirety, OCC's Rotating Basin Monitoring Program provides an assessment of water quality, watershed condition, and support status for selected streams statewide necessary for planning, implementation, and eventual evaluation of mitigation efforts. Results from this effort are used to assist the state in producing the 305(b) and 303(d) lists which are required by the EPA to assess beneficial use support for waterbodies biannually.

This report discusses the results of the *ambient* (routine physical, chemical, and biological sampling) and *diagnostic* (special parameter sampling) stages of the second cycle of the Rotating Basin program in the Neosho-Grand and Upper Canadian basins (see Figure 1). *Implementation* and *success* monitoring are typically accomplished through priority watershed projects and reported on in project-specific final reports.

The statewide ambient monitoring program has allowed a comprehensive approach for the identification of nonpoint source (NPS) affected waters, as well as the identification of high quality streams. This program will continue to provide a robust baseline dataset to assess the impact of NPS pollution throughout the state, identify the causes and sources of the pollution, and determine the success of measures to improve water conditions.

2.0 MATERIALS AND METHODS

2.1 GENERAL

Sampling stations were selected to effectively represent streams of the Upper North Canadian, Cimarron, and Upper Arkansas Basins. Candidate streams were selected from subwatersheds within these basins located entirely within the state of Oklahoma having perennial water. Watersheds that did not have perennial water or were actually a segment of a larger river being sampled by another agency were not chosen. Where a particular watershed was monitored by another entity, the stream was dropped from consideration for a Rotating Basin site if the monitoring being conducted met the project data quality objectives. For most subwatersheds, the monitoring site was located near the outflow of the primary stream far enough upstream to limit backwater (surface and alluvial) effects of the waterbody to which it drained. For larger subwatersheds, an additional site was sometimes located upstream to isolate a particularly strong tributary influence. In some cases, sites were specifically chosen to monitor a stream draining an

area of landuse different from the majority of the other streams being monitored in that region or subwatershed.

Reconnaissance of all of the potential sites within the Upper North Canadian, Cimarron, and Upper Arkansas basins was accomplished prior to the first round of monitoring in 2002, and sites which did not meet the sampling criteria were removed from the project. Seventy-two sites were monitored during the first rotating basin cycle, from 2002-2004, while 70 total sites were monitored during the second rotating basin cycle (two sites were dropped due to lack of landowner cooperation). Sixty-nine of the 70 streams were monitored at the same locations in this second cycle; one site was moved slightly. The second cycle of monitoring in these basins occurred from June 2007-May 2009.

The sites monitored in the Upper North Canadian basin occur over two level-three ecoregions: Southwestern Tablelands (SWT) and Central Great Plains (CGP) (Woods et al., 2005). In the Upper Arkansas basin, sites are located in the Southwestern Tablelands, Central Great Plains, or Flint Hills (FH) ecoregions. The Cimarron basin includes sites in the Southwestern Tablelands and Central Great Plains ecoregions, as well as one site in the Cross Timbers (CT) ecoregion; however, the site in the CT ecoregion (Lagoon Creek) has a heavy CGP influence (i.e., it is very close to the ecoregion border and its water originates in the CGP ecoregion), so it was grouped with the CGP sites when compared to reference conditions. A few other sites were grouped with the ecoregion from which a large influence was exerted, as shown in the "modified ecoregion" column in Table 1: Gray Horse Creek and Doga Creek (located in CGP but influenced by FH), Otter Creek Harper Co. and Wolf Creek Upper (located in CGP but influenced by SWT).

All sampling and analyses performed during this project were conducted under a Quality Assurance Project Plan (QAPP) approved by EPA Region VI and on file at the OCC Water Quality Division, the Oklahoma Secretary of the Environment (OSE), and EPA Region VI in Dallas. The reader is encouraged to obtain and consult the QAPP for specific questions concerning laboratory analytical methods, detection limits, and accuracy and precision limits. All sampling and measurement activities of OCC Water Quality staff followed procedures outlined in the appropriate OCC Standard Operating Procedure (OCC 2009). Water quality chemical analyses were conducted by the Oklahoma Department of Agriculture, Food and Forestry (ODAFF) laboratory.

2.2 WATER QUALITY MONITORING

Starting in June 2007, 70 sites were monitored for physical and chemical parameters on a fixed interval schedule of ten sampling events per year (five-week intervals) through May 2009 (usually 20 total events per site). This sampling frequency exceeds state data requirements for beneficial use assessment and meets a sample number necessary to provide a 90% level of confidence for principal water quality data (specifically phosphorus, a critical NPS concern) as determined from EPA's DEFT software. Samples were collected during both base flow and high flow conditions as they occurred on predetermined sampling dates. All sampling and measurement activities followed procedures outlined in the appropriate OCC SOP (OCC 2009). *In-situ* water quality parameters were measured at standardized sampling locations and include

the following parameters: water temperature, dissolved oxygen, pH, specific conductance, alkalinity, turbidity, and instantaneous discharge.

One water sample was collected per site per 35-day interval in two, new, sample-rinsed HDPE bottles; one was preserved to a pH <2 with H_2SO_4, and both were stored and delivered on ice or at 4° C. Quality assurance/control samples were collected in accordance with Data Quality Objectives (DQOs) outlined in the project QAPP. Samples were submitted to the ODAFF Laboratory for analysis of the following parameters: nitrate (NO_3), nitrite (NO_2), orthophosphate (PO_4), total phosphorus (TP), total Kjeldahl nitrogen (TKN), ammonia (NH_4), chloride (Cl), sulfate (SO_4), total suspended solids (TSS), total dissolved solids (TDS), 5-day biochemical oxygen demand (BOD_5), and total hardness. An estimate of total nitrogen was calculated by summing the values of nitrite, nitrate, and TKN for each sample. Available nitrogen was calculated by summing the values of ammonia, nitrite, and nitrate.

Separate samples were collected and submitted concurrently for analysis of *E. coli* and *Enterococcus* bacteria during the recreational season (May 1 – September 30), ensuring that a minimum of 10 samples were assessed per site over the two-year monitoring period. In addition, site observations of odor, excessive bottom deposits, surface scum, oil/grease, foam and other observations were recorded each time. All data were compiled and entered into an Access database for later analysis. Upon retrieval, data were proofed and quality assured, and the descriptive statistics were generated for each parameter using the statistical software package *Minitab V. 14*.

Table 1. Site List for Rotating Basin Monitoring Program: Basin Group 2, Cycle 2.

Site Name	WBID	Latitude	Longitude	Legal	County	Ecoregion	Modified Ecoregion
Beaver Creek: Logan Co.	OK620900-03-0230C	36.019	-97.3715	sw nw sw 24 18n 2w	Logan	CGP	CGP
Beaver Creek: Osage Co.	OK621210-00-0050L	36.869	-96.7454	ne ne 34 28n 5e	Osage	FH	FH
Bent Creek	OK720500-01-0070D	36.192	-99.0091	se ne se 21 20n 17w	Woodward	CGP	CGP
Bitter Creek	OK621100-00-0100G	36.837	-97.2834	sw nw nw 11 27n 1w	Kay	CGP	CGP
Black Bear Creek: Lower	OK621200-03-0010D	36.34	-96.6921	31/32 22n 6e	Pawnee	CGP	CGP
Black Bear Creek: Middle	OK621200-03-0010M	36.307	-96.996	wb 9 21n 3e	Noble	CGP	CGP
Black Bear Creek: Upper	OK621200-03-0010W	36.346	-97.2109	ne ne ne 32 22n 1e	Noble	CGP	CGP
Bois d'Arc	OK621000-03-0010C	36.638	-97.1206	se se se 18 25n 2e	Kay	CGP	CGP
Buffalo Creek: Lower	OK620920-05-0010G	36.771	-99.3668	nw sw sw 33 27n 20w	Harper	CGP	CGP
Buffalo Creek: Upper	OK620920-05-0010P	36.8	-99.4499	se se sw 22 27n 21w	Harper	CGP	CGP
Chickaskia Creek: Lower	OK621100-00-0010B	36.637	-97.2327	sb 18 25n 1e	Kay	CGP	CGP
Chickaskia Creek: Upper	OK621100-00-0010M	36.84	-97.3019	ne ne ne 9 27n 1w	Kay	CGP	CGP
Chilocco Creek	OK621200-00-0270C	36.967	-96.9573	wb 26 29n 3e	Kay	CGP	CGP
Cimarron River: Beaver Co.	OK620930-00-0010T	36.976	-100.314	sw nw nw 24 6n 25e	Beaver	SWT	SWT
Cimarron River: Cimarron Co.	OK720900-00-0180C	36.912	-102.82	sw nw sw 11 5n 2e	Cimarron	SWT	SWT
Clear Creek: Beaver Co.	OK720500-02-0300F	36.732	-100.453	ne ne ne 15 3n 24e	Beaver	SWT	SWT
Clear Creek: Harper Co.	OK720500-02-0070G	36.622	-99.851	se sw sw 24 25n 25w	Harper	SWT	SWT
Cooper Creek	OK620910-02-0040C	35.983	-97.9965	sw nw nw 6 17n 7w	Kingfisher	CGP	CGP
Cottonwood Creek	OK620910-04-0010D	35.842	-97.4399	sw sw sw 20 16n 2w	Logan	CGP	CGP
Council Creek	OK620900-02-0050H	36.083	-96.8193	wb 31 19n 5e	Payne	CGP	CGP

Site Name	WBID	Latitude	Longitude	Legal	County	Ecoregion	Modified Ecoregion
Crooked Creek: Beaver Co.	OK620930-00-0100G	36.976	-100.115	sw nw nw 23 6n 27e	Beaver	SWT	SWT
Crooked Creek: Grant Co.	OK621000-06-0010C	36.741	-97.9826	nw sw sw 8 26n 7w	Grant	CGP	CGP
Dead Indian Creek	OK620910-05-0080D	35.825	-97.9945	sw nw nw 31 16n 7w	Kingfisher	CGP	CGP
Deep Creek	OK620910-02-0250C	36.199	-98.2639	sw nw nw 22 20n 10w	Major	CGP	CGP
Deer Creek	OK621000-04-0010D	36.71	-97.3813	ne ne nw 26 26n 2w	Kay	CGP	CGP
Doga Creek	OK621200-02-0020C	36.565	-96.7959	nw nw 17 24n 5e	Osage	CGP	FH
Driftwood Creek	OK621010-03-0030C	36.841	-98.3466	se sw se 2 27n 11w	Alfalfa	CGP	CGP
Duck Pond Creek	OK720500-02-0250F	36.689	-100.315	nw nw ne 36 3n 25e	Beaver	SWT	SWT
Dugout Creek	OK620900-03-0080C	35.956	-97.0161	ne ne ne 18 17n 3e	Payne	CGP	CGP
Eagle Chief Creek: Lower	OK620920-04-0010C	36.405	-98.4465	sw se se 2 22n 12w	Major	CGP	CGP
Eagle Chief Creek: Upper	OK620920-04-0010G	36.636	-98.5582	nw nw nw 24 25n 13w	Woods	CGP	CGP
Euchee Creek	OK620900-01-0290D	36.017	-96.6426	wb 23 18n 6e	Payne	CGP	CGP
Gray Horse Creek	OK621200-01-0400C	36.502	-96.6914	ne 8 23n 6e	Osage	CGP	FH
Griever Creek	OK620920-01-0130G	36.392	-98.7998	se se se 9 22n 15w	Major	CGP	CGP
Indian Creek: Major Co.	OK620910-02-0310C	36.29	-98.2999	sw sw sw 17 21n 10w	Major	CGP	CGP
Indian Creek: Woodward Co.	OK720500-01-0200D	36.366	-99.2283	ne se se 21 22n 19w	Woodward	CGP	CGP
Kingfisher Creek	OK620910-05-0010J	35.858	-97.9944	sw sw sw 18 16n 7w	Kingfisher	CGP	CGP
Kiowa Creek: Beaver Co.	OK720500-02-0130M	36.573	-100.215	nw nw nw 12 1n 26e	Beaver	SWT	SWT
Kiowa Creek: Harper Co.	OK720500-02-0130C	36.737	-99.9804	nw nw nw 14 26n 26w	Harper	SWT	SWT
Lagoon Creek	OK620900-01-0180J	36.126	-96.5746	nc 16 19n 7e	Creek	CT	CGP
Long Creek	OK620920-02-0080D	36.711	-99.1179	nw ne ne 27 26n 18w	Woodward	CGP	CGP
Main Creek	OK620920-01-0180F	36.492	-98.8898	ne ne ne 10 23n 16w	Major	CGP	CGP
Medicine Lodge Creek	OK621010-03-0010D	36.841	-98.3334	sb 1 27n 11w	Alfalfa	CGP	CGP
Otter Creek: Harper Co.	OK720500-02-0050B	36.618	-99.7597	ne sw nw 26 25n 24w	Harper	CGP	SWT
Otter Creek: Logan Co.	OK620910-03-0040C	36.072	-97.5613	sw se sw 31 19n 3w	Logan	CGP	CGP
Palo Duro Creek	OK720500-02-0500G	36.544	-101.081	se se se 14 1n 18e	Texas	SWT	SWT
Persimmon Creek	OK720500-01-0150G	36.262	-99.1737	nw nw nw 31 21n 18w	Woodward	CGP	CGP
Pond Creek	OK621000-05-0010D	36.682	-97.5881	se se se 35 26n 4w	Grant	CGP	CGP
Red Rock Creek: Lower	OK621200-05-0010K	36.494	-97.0725	sw sw se 3 23n 2e	Noble	CGP	CGP
Red Rock Creek: Upper	OK621200-05-0010M	36.474	-97.3183	sw nw nw 16 23n 1w	Noble	CGP	CGP
Salt Creek: Kingfisher Co.	OK620910-02-0100D	36.103	-98.1926	sw sw sw 20 19n 9w	Kingfisher	CGP	CGP
Salt Creek: Lower	OK621200-04-0010F	36.565	-96.6888	se sw sw 8 24n 6e	Osage	FH	FH
Salt Creek: Payne Co.	OK620900-02-0020D	36.116	-96.739	se sw se 14 19n 5e	Payne	CGP	CGP
Salt Creek: Upper	OK621200-04-0010P	36.868	-96.6573	ne 33 28n 6e	Osage	FH	FH
Salt Fork of Arkansas River	OK621010-01-0010D	36.752	-98.128	ne ne ne 11 26n 9w	Alfalfa	CGP	CGP
Sand Creek	OK620920-05-0050J	36.711	-99.5123	sw sw sw 19 26n 21w	Harper	CGP	CGP
Sandy Creek	OK621010-02-0010D	36.841	-98.2026	sb 6 27n 9w	Alfalfa	CGP	CGP
Skeleton Creek: Lower	OK620910-03-0010F	36.014	-97.4914	sw se sw 23 18n 3w	Logan	CGP	CGP
Skeleton Creek: Upper	OK620910-03-0010S	36.098	-97.6569	ne se ne 30 19n 4w	Logan	CGP	CGP
Spring Creek	OK720500-02-0100D	36.65	-99.8911	nw nw nw 15 25n 25w	Harper	SWT	SWT
Stillwater Creek: Lower	OK620900-04-0040C	36.04	-96.9445	wb 13 18n 3e	Payne	CGP	CGP
Stillwater Creek: Upper	OK620900-04-0070T	36.131	-97.1401	ne ne ne 13 19n 1e	Payne	CGP	CGP
Turkey Creek: Lower	OK620910-06-0010B	35.978	-97.9228	nw sw nw 2 17n 7w	Kingfisher	CGP	CGP
Turkey Creek: Upper	OK620910-06-0010T	36.347	-98.0098	nw ne nw 36 22n 8w	Garfield	CGP	CGP

Site Name	WBID	Latitude	Longitude	Legal	County	Ecoregion	Modified Ecoregion
Turkey Creek: Woods Co.	OK621010-01-0230G	36.824	-98.6839	sw nw nw 14 27n 14w	Woods	CGP	CGP
Uncle John's Creek	OK620910-05-0030C	35.828	-97.9215	sw sw sw 26 16n 7w	Kingfisher	CGP	CGP
West Clay Creek	OK621010-01-0090R	36.723	-98.3068	ne ne ne 19 26n 10w	Alfalfa	CGP	CGP
Wolf Creek: Lower	OK720500-02-0030M	36.566	-99.551	se se ne 9 24n 22w	Woodward	CGP	CGP
Wolf Creek: Upper	OK720500-03-0010G	36.449	-99.5882	ne ne ne 30 23n 22w	Woodward	CGP	SWT
Yellowstone Creek	OK621010-01-0270C	36.981	-98.8691	nw sw nw 19 29n 15w	Woods	CGP	CGP

2.3 BIOLOGICAL MONITORING

2.3.1 Habitat Assessment

In the summer of 2007, OCC staff conducted instream and riparian habitat assessments at sites concurrent with fish collections. A few habitat and fish collections were conducted in the summer of 2008 or 2009 due to drought conditions in 2007 (see Table 12 for exact dates). All assessments were conducted in accordance with procedures outlined in the OCC Habitat Assessment SOP (OCC 2009). The OCC's habitat assessment adheres to a modified version of the EPA Rapid Bioassessment Protocols (RBP) (Plafkin et al., 1989) and is designed to assess habitat quality in relation to its ability to support biological communities in the stream. The assessment is based on particular parameters grouped into three categories for a total of eleven components (Plafkin et al. 1989). The eleven components are discussed in more detail below. The three primary categories assessed include micro scale habitat, macro scale habitat, and riparian/bank structure. Micro scale habitat includes substrate makeup, stable cover, canopy, depth, and velocity. Macro scale assesses the channel morphology, sediment deposits, and other parameters. The third category looks at the riparian zone quality, width, and general makeup (trees, shrubs, vines, and grasses) as well as bank features. Bank erosion and streamside vegetative cover are incorporated into this section.

Each stream segment was surveyed for 400 meters upstream or downstream of the starting point (usually a road crossing). Investigators recorded data for the described parameters for 20 stations at 20 meter intervals. Habitat data were entered, metrics were computed, and a "total habitat score" was rendered via *Access* programming. The total habitat score, which can reach a maximum of 180 points, was calculated based on quantitative weighting given to each of the habitat parameters in relation to their biological significance. Scores were computed for each of the eleven categories, summed, and assigned as an evaluation of that stream section and riparian zone.

OCC's habitat assessment components include:

(1) **Instream cover** is the component of habitat that organisms hide behind, within, or under. High quality cover consists of things like submerged logs, cobble and boulders, root wads, and beds of aquatic plants. Cover required by smaller members of the stream community will consist of gravel, cobbles, small woody debris, and dense beds of fine aquatic plants. At least 50% of

the stream's area should be occupied by a mixture of stable cover types for this category to be considered optimal.

(2) **Pool bottom substrate** describes the type of stream bed found in pools. Pools are depositional areas of the stream, and as such, are easily damaged by materials that settle. A loose shifting pool bottom will not provide substrate for burrowing organisms and will not allow bottom-spawning fish to successfully spawn. It will not provide habitat to the smaller vertebrates and invertebrates that are necessary to support many of the pool dwelling fish. At least 80% of all pool bottoms must have stable substrate for a reach to be considered optimal for this habitat component.

(3) **Pool variability** describes the depth of pools. A healthy, diverse community of aquatic organisms requires both deep and shallow pools. A fairly even mix of pool depths from a few centimeters to 0.5 meters or greater is optimal.

(4) **Canopy cover** assesses the shading of the stream section. Plants lie at the base of almost all food chains. Since plants require light for growth and survival, a stream that is functioning well needs some amount of light. Moderation is optimal, however, because light is associated with heat, and most aquatic organisms are more stressed by the warmer waters and the lower oxygen solubility and higher metabolic rates that accompany the warming of water.

(5) The **percent of rocky runs and riffles** is calculated for the fifth component. Rocky runs and riffles offer a unique combination of highly oxygenated, turbulent water, flowing over high quality cover and substrate. Turbulence prevents the formation of nutrient concentration gradients from cell membranes outward so that algae and other plants grow at a much higher rate than they would at the same concentration in pools. More food means more growth. Larger crops of algae are translated into larger invertebrate crops. It is these invertebrates, reared in riffle areas, that feed many of the fish in the stream. Because turbulent water is well oxygenated, there has been no selection pressure for riffle dwelling organisms to develop tolerance to poorly oxygenated waters. These are often the first animals to disappear from the stream if oxygen becomes scarce. The presence of rocky runs and riffles offers habitat for many highly adapted animals that will increase diversity of samples collected from the streams they occupy.

(6) **Discharge** at representative low flow reflects stream size. Water is the most basic requirement of aquatic organisms. Larger streams tend to have more water, and thus, more varied high quality habitat. Overall habitat quality should rise as streams increase in size and discharge, other factors being equal.

(7) **Channel alteration** is the seventh category. The presence of newly formed point bars and islands is very significant. Unstable streambeds support fewer types of animals than those that are stable. This is because unstable streambeds tend to have unstable pool bottom substrate, riffle areas whose cobbles are embedded in finer material, and little cover because it is continually being buried. Few or no signs of channel alteration are considered optimal.

(8) **Channel sinuosity** measures how far a channel deviates from a straight line. More sinuous channels tend to have more undercut banks, root wads, submerged logs, etc. IBI scores should

be higher as channels become more sinuous. Sinuosity is calculated from digital ortho quad maps using Geographic Information System technology (GIS).

(9) The **bank erosion** index assesses the stability of the stream bank. Stable stream banks tend to increase IBI scores for many reasons. Most importantly, they do not contribute sediment to the stream channel. As a rule, channels with stable banks tend to be deeper and narrower than channels with unstable banks. Because of the increased depth and decreased width, they tend to be cooler and they also tend to grow less algae for a given amount of nutrients than do shallow, wide channels. Overall habitat quality should increase as bank stability increases.

(10) The **vegetative stability of the stream bank** is an important component. Stream banks can be stabilized with a number of materials including rock, concrete, and fabric. Banks that are stabilized with vegetation benefit the aquatic community more than those stabilized with other materials. This is because the vegetation offers several extra advantages beyond that of bank stability. The riparian plants of the stream bank offer a high quality source of food and shade to the aquatic community. Riparian vegetation stabilizes point bars and contributes greatly to structure in the form of root wads and woody debris. Overall habitat quality should improve as bank vegetative stability increases.

(11) The last category is **streamside cover**. A large part of the energy and food input to the stream comes from the terrestrial vegetation along the banks. A mixture of grasses, forbs, shrubs, vines, saplings, and large trees transfer these necessities to the stream more effectively than does any single type of vegetation. Habitat quality should increase as the form of bank vegetation increases in diversity.

2.3.2 Fish

Most collections were obtained in the summer of 2007, with 10 collections in 2008 and 5 collections in 2009. Fish were collected from a 400-meter reach at all sites using a combination of seining and electroshocking according to procedures outlined in OCC SOP (2009). The collection of fish follows a modified version of the EPA Rapid Bioassessment Protocol V (Plafkin et al., 1989) supplemented by other documents. Specific techniques and relative advantages of seining and electrofishing vary considerably according to stream type and conductivity. Depending upon workable habitat, seining was performed first at all sites and was accomplished by use of either 6’ X 10’ or 6’ X 20’ seines of ¼ inch mesh equipped with 8’ brailes. Electroshocking was undertaken at all sites with suitable conductivities (usually < 1000 µS/cm) and involved the use of a Smith Root LR24 backpack shocker. For sites possessing long pools too deep to seine or backpack shock, OCC field personnel employed a boat electrofishing unit consisting of a Smith-Root GPP 2.5 shocking unit powered by a Honda 5kw generator.

Except for those individuals readily identifiable, fish were placed in 10% formalin upon capture and identified to species by a professional taxonomist. Fish species identified and released in the field were photographed on print film for reference. All fixed fish samples were transferred to ethanol and retained for future reference.

Fish data were compiled and analyzed by site using state biocriteria and methods outlined in the state’s *Use Support Assessment Protocols* (OWRB 2007). In addition, each site was assessed

using a modified version of Karr's Index of Biotic Integrity (IBI) (adapted from Plafkin et al., 1989). Descriptive statistics were determined for each metric using the *Minitab V. 14* software. The condition of the fish community was based on indices of species richness, community quality, trophic structure, and by comparison to the average scores of high-quality streams in that ecoregion. The modified IBI score was calculated using the following metrics:

(1) The **total number of fish species** decreases with decreasing water or habitat quality.

(2) The **number of sensitive benthic species (darters, madtoms, sculpins)** decreases with increasing siltation and increasing benthic oxygen demand. Many of these fish actually live within the cobble and gravel interstices and are very good indicators of conditions that make this environment inhospitable. These species are weak swimmers that do not readily travel up and down a stream, so their presence or absence at a site relates well to both past and present habitat and water quality conditions at that site.

(3) The **number of sunfish species** decreases with decreasing pool quality and with decreasing cover. Sunfish also require a fairly stable substrate on which to spawn, so their long-term success is also tied to conditions that affect the amount of sediment that enters and leaves the stream.

(4) The **number of intolerant species** is a characteristic of the fish community that separates high quality from moderate quality sites. A high quality stream will have several members of the fish community that are intolerant to environmental stress. A stream of only moderate quality will have fish that are moderately and highly tolerant of environmental stress. The intolerant species will not be present in the moderate quality stream.

(5) The **proportion of tolerant individuals** is a characteristic that allows moderate quality streams to be separated from low quality streams. These are opportunistic, tolerant fish that dominate communities that have lost their competitors through loss of habitat or water quality.

(6) The **proportion of individuals as insectivorous cyprinids** increases as the quality and quantity of the invertebrate food base increases. These are the dominant minnows in North American streams but are replaced by either omnivorous or herbivorous minnows as the quality of the food base deteriorates. Often, as the density of aquatic invertebrates decreases, the standing crop of algae increases. This is because the aquatic invertebrates are the largest group of primary consumers. Fish that can switch their diet to algae or fish that eat only algae will replace fish that cannot adapt to the new conditions.

(7) The **proportion of individuals as lithophilic spawners** decreases as the quality of the stream decreases. Lithophilic spawners require cobble or gravel in order to spawn; hence, these fish are sensitive to siltation. This metric allows separation of excellent streams from moderate quality streams.

For each of these seven metrics, a score of 5, 3, or 1 was assigned (Table 2), and these scores were summed to get a total IBI score (35 point maximum) for each site. For all "proportion" metrics, the score was based on the actual metric. For all non-proportion metrics, the score was

determined by dividing the monitoring site's metric by the average high quality site metric of the same ecoregion. Each monitoring site's total score was then compared to the high quality site total score in that ecoregion and given an integrity rating (as established and suggested by the EPA RBP; see Table 3, below). IBI scores that fell between the assessment ranges were classified in the closest scoring group. This score indicates the quality of the fish community (higher scores indicate higher quality) but says nothing about whether any deficiencies are due to degraded water quality or to degraded habitat.

Table 2. Index of Biotic Integrity (IBI) scoring criteria for fish.

Metrics	*5*	*3*	*1*
Number of species	>67%	33-67%	<33%
Number of sensitive benthic species	>67%	33-67%	<33%
Number of sunfish species	>67%	33-67%	<33%
Number of intolerant species	>67%	33-67%	<33%
Proportion tolerant individuals	<10%	10-25%	>25%
Proportion insectivorous cyprinid individuals	>45%	20-45%	<20%
Proportion individuals as lithophilic spawners	>36%	18-36%	<18%

Table 3. Index of Biotic Integrity (IBI) score interpretation for fish.

% Comparison to the Reference Score	Integrity Class	Characteristics
>97%	Excellent	Comparable to pristine conditions, exceptional species assemblage
80 - 87%	Good	Decreased species richness, especially intolerant species
67 - 73%	Fair	Intolerant and sensitive species rare or absent
47 - 57%	Poor	Top carnivores and many expected species absent or rare; omnivores and tolerant species dominant
26 - 37%	Very Poor	Few species and individuals present; tolerant species dominant; diseased fish frequent

2.3.3 Macroinvertebrates

Collection of macroinvertebrates was attempted at all sites for both the winter and summer index periods of July 2007 through March 2009 according to procedures outlined in the OCC SOP (2009). Index periods represent seasons of relative community stability that afford opportunity for meaningful site comparisons. For Oklahoma, the summer index occurs from July 1 to September 15; the winter index occurs from January 1 to March 15. In order for macroinvertebrate collections to be obtained, flowing water must be present. Sampling efforts included attempts to procure animals from all available habitats at a site; thus, total effort at a site may entail up to three total samples with one from each of the following habitats: rocky riffles, streamside vegetation, and woody debris.

Collection methods involved sampling each of the habitats similar to methods outlined in the EPA Rapid Bioassessment Protocols (Plafkin et al., 1989). Riffle sampling effort consisted of three, one meter squared kicknet samples in areas of rocky substrate reflecting the breadth of the velocity regime at a site. Riffles with substrates of bedrock or tight clay were not sampled. Any streamside vegetation in the current that appeared to offer fine structure was sampled by agitation within a #30 mesh dip net for three minutes total agitation time. Any dead wood with or without bark which was in current fast enough to offer suitable habitat for organisms was sampled by agitation or by scraping/brushing upstream of a #30 mesh dip net for 5 minutes. Woody debris sampled generally ranged in size from 1/4" to about 8" in diameter. Each sample type was preserved independently in quart mason jars with ethanol, labeled, and sent to a professional taxonomist for picking and identification.

Data was compiled, collated by year, season, and sample type and entered into a spreadsheet for metric calculations. The six metrics used to assess the macroinvertebrate community include the following:

(1) The **number of taxa** refers to the total number of taxonomically different types of animals in the sample. As is the case with the fish, this number rises with increasing water and/or habitat quality (Plafkin et al., 1989).

(2) The **Modified Hilsenhoff Biotic Index (HBI)** is a measure of the invertebrate community's tolerance to organic pollution. It ranges between 0 and 10 with 0 being the most pollution sensitive. The index used in the RBP Manual is based on the pollution tolerance of invertebrates from the upper midwest. The Index used here is calculated the same way, but uses tolerance values of North Carolina invertebrates (Plafkin et al., 1989).

(3) The **percent EPT** is a measure of how many individuals in the sample are members of the EPT group. This metric helps to separate high quality streams from those of moderately high quality. The highest quality streams will have many individuals of many different taxa of EPT. As conditions deteriorate, animals will begin to die or to drift downstream. At this point, the community will still have many taxa of EPT, but there will be fewer individuals (Plafkin et al., 1989).

(4) The **EPT Index** is the number of different taxa from the orders Ephemeroptera, Plecoptera, and Trichoptera, the mayflies, stoneflies, and caddis flies respectively. With few exceptions, these insects are more sensitive to pollution than any other groups. As a stream deteriorates in quality, members of this group will be the first to disappear. This robust metric allows discrimination between all but the worst of streams (Plafkin et al., 1989).

(5) **Percent dominant two taxa** is the percentage of the collection composed of the most common two taxa. As more and more species are excluded by increasing pollution, the remaining species can increase in numbers due to the unused resources left by the excluded animals. This metric helps to separate the high quality streams from those of moderate quality (Plafkin et al., 1989).

(6) The **Shannon-Weaver Species Diversity Index** measures the evenness of the species distribution. It increases as more and more taxa are found in the collection and as individual taxa become less dominant. This metric increases with increasing biotic quality (Plafkin et al., 1989).

Descriptive statistics of each season-specific sample type (e.g., summer riffle, winter vegetation, summer woody) for each site were determined via *Minitab V. 14* and were compared to the average respective metric of high-quality streams in the ecoregion. A bioassessment score was calculated similarly to the IBI score for fish. For each site, scores of 6, 4, 2, or 0 were assigned for each metric (according to the criteria in Table 4, below) and then summed to get a total bioassessment score for each site, with a maximum of 36 points. For taxa richness and EPT taxa richness, the percentages used to assign scores were obtained by dividing each monitoring site metric by the average high quality site metric in a particular ecoregion. For the HBI metric, the high quality site value was divided by the monitoring site value (high quality site metric / monitoring site metric). For the remaining metrics, the score was based on the actual values obtained instead of being relative to the high quality site metric. Each monitoring site's total score was then compared to the average high quality sites' total score (in that ecoregion) and classified according to the condition gradient outlined in Table 5 (adapted from Plafkin et al., 1989).

Table 4. Bioassessment scoring criteria for macroinvertebrates. *Modified HBI Using North Carolina Tolerance Values, **RBP for Use in Streams and Rivers 1989, ***Modified by OCC

Metrics	*6*	*4*	*2*	*0*
Taxa Richness**	>80%	60-80%	40-60%	<40%
Modified HBI* (**)	>85%	70-85%	50-70%	<50%
EPT/Total***	>30%	20-30%	10-20%	<10%
EPT Taxa**	>90%	80-90%	70-80%	<70%
% Dominant 2 Taxa**	<20%	20-30%	30-40%	>40%
Shannon-Weaver***	>3.5	2.5-3.5	1.5-2.5	<1.5

Table 5. Bioassessment score interpretation for macroinvertebrates.

% Comparison to the Reference Score	Biological Condition	Characteristics
>83%	Non-impaired	Comparable to the best situation expected in that ecoregion; balanced trophic and community structure for stream size
54 - 79%	Slightly Impaired	Community structure and species richness less than expected; percent contribution of tolerant forms increased and loss of some intolerant species
21 - 50%	Moderately Impaired	Fewer species due to loss of most intolerant forms; reduction in EPT index
<17%	Severely Impaired	Few species present; may have high densities of 1 or 2 taxa

2.4 WATERSHED ASSESSMENT

To investigate potential sources of NPS pollution for streams showing beneficial use impairment, relevant data layers were explored using ArcView 3.2 Geographic Information System (GIS) software. Data explored included the 2001 USGS National Land Cover Dataset (NLCD), oil and gas wells, confined animal feeding operations, national pollution discharge elimination system permit holders, total retention sites, biosolid land application sites and other data layers. The NLCD was explored to determine percent occurrence of particular landuse types such as bare rock/sand/clay, vegetation (broken into several categories, both natural and agricultural), open water, and residential/commercial/industrial uses (divided into several categories).

2.5 BENEFICIAL USE SUPPORT ASSESSMENT

Each stream's assigned beneficial uses were evaluated following the protocols outlined in the state's *Continuing Planning Process, Integrated Water Quality Report Listing Methodology* (Oklahoma Department of Environmental Quality, 2007) and per *Oklahoma Administrative Code 785, Chapter 46: Implementation of Oklahoma's Water Quality Standards, Subchapter 15: Use Support Assessment Protocols* (OWRB 2007). Streams were considered non-supporting when Oklahoma Water Quality Standards were violated as determined by criteria and rules listed in these documents. Parameters not addressed in OAC 785:46-15 were assessed using applicable state and federal rules and regulations to determine support status. Assessment results were submitted to the ODEQ for final assimilation in the state's 2010 Integrated Report submitted to EPA Region VI.

3.0 RESULTS AND DISCUSSION

3.1 WATER QUALITY MONITORING

All chemical and physical water quality data collected for the project are included in Appendix A.1; Appendix A.2 contains the bacteria data. Table 6 gives the mean values of all water quality parameters collected *in-situ* for each site, regardless of flow. Average "base flow" is given, with elevated flows omitted. Table 7 provides the means for all chemical analytes assessed, regardless of flow. Descriptive statistics for water quality parameters are presented by site in Appendix A.3.

Table 6. Mean *In-Situ* Water Quality Values for Basin Group 2 Monitoring Sites, 2007-2009.

Site Name	WBID	DO (mg/L)	Turb (NTU)	Alkalinity (CaCO3)	Temp (°C)	Conductivity (uS/cm)	pH (SU)	Base Flow (cfs)
Beaver Creek: Logan Co.	OK620900-03-0230C	9.16	117.80	273	17.3	868.5	7.97	3.00
Beaver Creek: Osage Co.	OK621210-00-0050L	9.14	84.70	174	15.6	425.0	7.76	10.93
Bent Creek	OK720500-01-0070D	9.37	8.54	252	13.3	1834.0	8.01	12.70
Bitter Creek	OK621100-00-0100G	9.06	52.30	224	14.9	3108.0	7.68	13.93
Black Bear Creek: Lower	OK621200-03-0010D	9.54	245.60	195	16.7	687.3	7.95	41.32
Black Bear Creek: Middle	OK621200-03-0010M	9.31	160.80	232	15.9	971.0	8.01	28.50
Black Bear Creek: Upper	OK621200-03-0010W	9.70	92.70	243	15.4	1082.0	7.97	17.62

Site Name	WBID	DO (mg/L)	Turb (NTU)	Alkalinity (CaCO3)	Temp (°C)	Conductivity (uS/cm)	pH (SU)	Base Flow (cfs)
Bois d'Arc Creek	OK621000-03-0010C	8.60	61.20	231	14.6	1377.2	7.75	15.41
Buffalo Creek: Lower	OK620920-05-0010G	9.93	17.90	166	15.0	2487.0	7.97	7.23
Buffalo Creek: Upper	OK620920-05-0010P	11.02	51.80	200	15.7	2137.0	8.02	4.50
Chickaskia River: Lower	OK621100-00-0010B	8.24	106.10	200	14.6	1028.7	7.74	39.51
Chickaskia River: Upper	OK621100-00-0010M	10.64	143.20	196	15.2	713.3	7.86	90.20
Chilocco Creek	OK621210-00-0270C	9.02	48.90	212	14.6	792.8	7.79	5.86
Cimarron River: Beaver Co.	OK620930-00-0010T	9.70	18.28	226	20.0	3586.0	8.55	29.26
Cimarron River: Cimarron Co.	OK720900-00-0180C	5.96	18.79	293	12.6	1948.0	7.93	0.21
Clear Creek: Beaver Co.	OK720500-02-0300F	8.94	3.55	239	15.7	1600.3	7.90	2.37
Clear Creek: Harper Co.	OK720500-02-0070G	9.18	5.13	208	13.6	739.6	8.02	5.88
Cooper Creek	OK620910-02-0040C	10.01	103.40	294	15.1	2182.0	8.11	8.46
Cottonwood Creek	OK620910-04-0010D	8.58	183.70	240	17.6	1029.3	8.00	55.70
Council Creek	OK620900-02-0050H	8.70	85.00	259	14.9	625.3	7.83	5.66
Crooked Creek: Beaver Co.	OK620930-00-0100G	10.07	12.58	212	19.5	3778.0	8.29	6.15
Crooked Creek: Grant Co.	OK621000-06-0010C	10.02	40.80	321	16.9	1531.5	8.20	15.72
Dead Indian Creek	OK620910-05-0080D	8.70	75.20	270	13.9	2306.0	7.92	9.87
Deep Creek	OK620910-02-0250C	9.45	90.10	245	15.2	2031.0	7.94	20.00
Deer Creek	OK621000-04-0010D	9.00	144.70	243	14.5	1538.0	7.75	10.73
Doga Creek	OK621200-02-0020C	9.10	76.10	200	15.2	507.0	7.67	0.86
Driftwood Creek	OK621010-03-0030C	8.95	96.30	299	16.3	2049.0	8.05	6.77
Duck Pond Creek	OK720500-02-0250F	9.48	8.15	211	16.3	1192.7	7.92	0.67
Dugout Creek	OK620900-03-0080C	9.19	75.30	273	14.3	782.7	8.05	44.70
Eagle Chief Creek: Lower	OK620920-04-0010C	11.23	64.90	261	16.1	1286.9	8.24	22.19
Eagle Chief Creek: Upper	OK620920-04-0010G	11.04	48.40	234	18.3	3479.0	8.02	5.95
Euchee Creek	OK620900-01-0290D	8.38	74.50	209	16.8	506.5	7.55	0.00
Gray Horse Creek	OK621200-01-0400C	8.82	89.50	153	15.8	472.1	7.60	7.03
Griever Creek	OK620920-01-0130G	10.09	57.90	183	15.5	2873.0	8.01	1.49
Indian Creek: Major Co.	OK620910-02-0310C	10.01	70.50	281	13.9	1206.8	8.09	14.24
Indian Creek: Woodward Co.	OK720500-01-0200D	10.07	13.12	239	14.3	1323.7	8.22	5.36
Kingfisher Creek	OK620910-05-0010J	8.69	126.30	280	14.8	2304.0	8.02	23.91
Kiowa Creek: Harper Co.	OK720500-02-0130C	9.68	15.79	216	15.7	962.3	8.22	9.65
Kiowa Creek: Beaver Co.	OK720500-02-0130M	7.64	13.73	213	15.1	1006.5	7.83	4.00
Lagoon Creek	OK620900-01-0180J	8.50	66.80	168	16.8	431.3	7.66	6.14
Long Creek	OK620920-02-0080D	10.16	18.72	163	14.8	2645.0	7.89	1.83
Main Creek	OK620920-01-0180F	9.69	67.90	167	14.9	2748.0	7.98	9.34
Medicine Lodge River	OK621010-03-0010D	9.55	93.10	191	16.0	1064.4	8.12	67.00
Otter Creek: Harper Co.	OK720500-02-0050B	8.03	7.26	257	12.5	1852.6	7.91	1.16
Otter Creek: Logan Co.	OK620910-03-0040C	10.82	95.60	302	17.5	953.9	8.19	15.05
Palo Duro Creek	OK720500-02-0500G	7.73	5.54	233	16.0	2469.0	7.85	0.69
Persimmon Creek	OK720500-01-0150G	9.47	39.59	286	13.8	964.0	8.35	14.38
Pond Creek	OK621000-05-0010D	8.49	116.80	318	16.8	1364.5	7.94	6.12
Red Rock Creek: Lower	OK621200-05-0010K	8.35	183.80	255	15.9	976.0	7.93	27.90
Red Rock Creek: Upper	OK621200-05-0010M	8.76	121.20	295	15.7	1123.0	7.97	18.08

Site Name	WBID	DO (mg/L)	Turb (NTU)	Alkalinity (CaCO3)	Temp (°C)	Conductivity (uS/cm)	pH (SU)	Base Flow (cfs)
Salt Creek: Lower	OK621200-04-0010F	9.29	65.60	185	15.7	574.0	7.85	37.10
Salt Creek: Upper	OK621200-04-0010P	8.95	32.50	172	17.2	414.7	7.85	14.02
Salt Fork of Arkansas River	OK621010-01-0010D	10.44	148.90	146	17.7	4449.0	8.42	189.60
Salt Creek: Kingfisher Co.	OK620910-02-0100D	9.83	128.70	221	13.9	12560.0	7.85	67.40
Salt Creek: Payne Co.	OK620900-02-0020D	8.29	49.90	207	15.7	615.0	7.69	6.63
Sand Creek	OK620920-05-0050J	7.53	18.31	237	15.9	2750.0	7.77	0.57
Sandy Creek	OK621010-02-0010D	9.23	27.80	247	15.6	885.4	8.18	23.55
Skeleton Creek: Lower	OK620910-03-0010F	11.20	151.70	325	16.5	1394.0	8.11	96.10
Skeleton Creek: Upper	OK620910-03-0010S	9.92	92.50	352	17.1	1818.2	8.22	28.63
Spring Creek	OK720500-02-0100D	9.27	4.18	237	13.0	618.8	7.96	0.75
Stillwater Creek: Lower	OK620900-04-0040C	8.76	156.30	174	16.1	764.8	7.86	22.40
Stillwater Creek: Upper	OK620900-04-0070T	8.16	38.36	202	16.5	562.8	7.94	8.36
Turkey Creek: Woods Co.	OK621010-01-0230G	9.63	49.10	246	14.0	2925.0	8.00	2.33
Turkey Creek: Lower	OK620910-06-0010B	9.12	128.60	339	14.7	1445.6	8.13	26.86
Turkey Creek: Upper	OK620910-06-0010T	10.61	78.20	325	16.7	1654.0	8.15	14.29
Uncle John's Creek	OK620910-05-0030C	9.33	134.70	260	13.8	863.0	7.99	14.50
West Clay Creek	OK621010-01-0090R	10.18	22.78	340	16.8	4913.0	7.88	2.09
Wolf Creek: Lower	OK720500-02-0030M	9.72	33.40	216	17.6	1214.9	8.23	23.84
Wolf Creek: Upper	OK720500-03-0010G	9.50	13.03	224	16.1	996.8	8.23	49.10
Yellowstone Creek	OK621010-01-0270C	9.52	9.12	157	18.3	2512.0	7.95	3.59

Table 7. Mean Water Quality Values for Basin Group 2 Monitoring Sites, 2007-2009.

Site Name	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	TotHardness (mg/L)
Beaver Creek: Logan Co.	OK620900-03-0230C	111.60	60.19	527.7	0.0291	0.2889	0.0317	0.7260	0.0779	0.2452	456.0	287.5
Beaver Creek: Osage Co.	OK621210-00-0050L	10.40	12.37	257.0	0.0159	0.2082	0.0196	0.3760	0.0248	0.0866	66.6	237.7
Bent Creek	OK720500-01-0070D	46.80	1136.60	2011.4	0.0244	0.6625	0.0290	0.2543	0.0863	0.1173	16.5	1396.7
Bitter Creek	OK621100-00-0100G	575.40	582.80	2049.0	0.0440	1.0230	0.0141	0.8000	0.0791	0.1640	55.5	1118.0
Black Bear Creek: Lower	OK621200-03-0010D	91.60	30.30	408.3	0.0215	0.2945	0.0367	0.8090	0.1179	0.2747	442.0	215.3
Black Bear Creek: Middle	OK621200-03-0010M	162.50	43.51	558.7	0.0222	0.4425	0.0430	0.7740	0.1358	0.2858	338.0	270.2
Black Bear Creek: Upper	OK621200-03-0010W	232.50	49.40	688.9	0.0189	0.7630	0.0475	0.7920	0.1991	0.3496	445.0	316.3
Bois d'Arc Creek	OK621000-03-0010C	110.44	294.20	900.4	0.0347	0.9950	0.0446	0.5776	0.0784	0.1485	56.1	546.3
Buffalo Creek: Lower	OK620920-05-0010G	207.60	1574.50	2703.0	0.0229	0.2049	0.0354	0.4508	0.0187	0.0458	21.2	1758.0
Buffalo Creek: Upper	OK620920-05-0010P	185.70	1219.70	2243.0	0.0405	0.3090	0.0367	0.5960	0.0379	0.0787	40.2	1505.4
Chickaskia River: Lower	OK621100-00-0010B	132.50	133.42	621.6	0.0214	1.0980	0.0374	0.6328	0.1151	0.2102	148.8	365.6
Chickaskia River: Upper	OK621100-00-0010M	81.14	90.90	628.0	0.0184	1.2360	0.0266	0.4700	0.1152	0.2092	137.5	292.2
Chilocco Creek	OK621210-00-0270C	88.60	47.71	466.3	0.0280	0.5180	0.0284	0.4750	0.0706	0.1453	33.7	314.9
Cimarron River: Beaver Co.	OK620930-00-0010T	1260.50	212.96	2636.1	0.0245	1.3780	0.0141	0.7920	0.3977	0.4915	70.7	454.2
Cimarron River: Cimarron Co.	OK720900-00-0180C	80.50	920.60	1671.0	0.0229	0.6850	0.0251	0.8880	0.0175	0.0776	14.1	729.5
Clear Creek: Beaver Co.	OK720500-02-0300F	286.36	196.20	957.7	0.0113	0.0177	0.0449	0.3294	0.0077	0.0230	7.1	473.3
Clear Creek: Harper Co.	OK720500-02-0070G	97.84	47.67	417.5	0.0124	0.6145	0.0364	0.2480	0.0099	0.0424	9.5	313.5
Cooper Creek	OK620910-02-0040C	292.40	605.00	1633.1	0.0247	0.9330	0.0542	0.7500	0.1442	0.2233	74.6	753.5
Cottonwood Creek	OK620910-04-0010D	99.40	146.10	642.9	0.0260	3.2800	0.0418	0.7560	0.8620	0.9768	293.0	348.2
Council Creek	OK620900-02-0050H	66.49	25.40	394.4	0.0160	0.1530	0.0370	0.4790	0.0307	0.0990	99.3	290.8
Crooked Creek: Beaver Co.	OK620930-00-0100G	1247.00	210.11	2512.1	0.0106	0.1423	0.0141	0.4400	0.0244	0.0649	16.2	464.9
Crooked Creek: Grant Co.	OK621000-06-0010C	268.30	232.90	928.1	0.0408	1.0375	0.0330	0.8480	0.1377	0.2131	33.8	411.5
Dead Indian Creek	OK620910-05-0080D	232.80	687.70	1729.5	0.0322	1.1510	0.0597	0.6980	0.1503	0.2224	70.8	898.4
Deep Creek	OK620910-02-0250C	527.80	994.20	1872.0	0.0392	1.3950	0.0307	0.7620	0.1077	0.1999	113.5	1156.4
Deer Creek	OK621000-04-0010D	270.40	110.69	846.9	0.0196	0.8870	0.0505	1.0440	0.1244	0.2658	257.0	449.8
Doga Creek	OK621200-02-0020C	29.34	25.17	324.6	0.0141	0.1002	0.0221	0.4640	0.0395	0.1129	69.4	239.0
Driftwood Creek	OK621010-03-0030C	133.70	735.90	1543.1	0.0347	0.2931	0.0234	0.7080	0.0941	0.1847	68.5	989.3
Duck Pond Creek	OK720500-02-0250F	211.00	64.20	641.2	0.0156	0.0468	0.0352	0.3440	0.0199	0.0515	9.2	276.1
Dugout Creek	OK620900-03-0080C	97.89	20.14	467.8	0.0174	0.1919	0.0382	0.5840	0.0310	0.0939	65.0	355.2

Site Name	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	TotHardness (mg/L)
Eagle Chief Creek: Lower	OK620920-04-0010C	76.85	386.00	994.0	0.0252	2.3870	0.0363	0.5427	0.0419	0.1183	113.1	627.8
Eagle Chief Creek: Upper	OK620920-04-0010G	134.70	1068.20	1904.4	0.0159	1.2480	0.0285	0.6730	0.0476	0.1163	88.3	1229.7
Euchee Creek	OK620900-01-0290D	29.59	35.49	336.1	0.0152	0.2147	0.0270	0.4179	0.0837	0.1626	66.7	243.6
Gray Horse Creek	OK621200-01-0400C	36.55	33.39	292.3	0.0146	0.0904	0.0181	0.4450	0.0259	0.0982	63.5	195.0
Griever Creek	OK620920-01-0130G	222.40	1678.00	2964.0	0.0137	0.1142	0.0389	0.5540	0.0574	0.1078	113.3	1877.2
Indian Creek: Major Co.	OK620910-02-0310C	189.76	263.40	894.0	0.0279	4.2770	0.0367	0.5460	0.1105	0.1803	55.2	498.2
Indian Creek: Woodward Co.	OK720500-01-0200D	207.84	274.73	1038.9	0.0106	0.3872	0.0339	0.4450	0.0202	0.0489	23.1	512.7
Kingfisher Creek	OK620910-05-0010J	240.90	725.60	1711.5	0.0216	1.2740	0.0382	0.7310	0.1001	0.1750	119.8	886.1
Kiowa Creek: Harper Co.	OK720500-02-0130C	148.00	65.24	528.9	0.0117	0.4340	0.0352	0.2962	0.0249	0.0562	21.1	285.2
Kiowa Creek: Beaver Co.	OK720500-02-0130M	130.40	77.13	560.9	0.0266	0.4597	0.0312	0.3918	0.0267	0.0608	14.7	304.0
Lagoon Creek	OK620900-01-0180J	44.24	23.62	290.8	0.0125	0.0805	0.0272	0.4100	0.0239	0.0796	47.6	192.5
Long Creek	OK620920-02-0080D	224.20	1478.20	2646.2	0.0106	0.2499	0.0359	0.3459	0.0112	0.0313	16.2	1615.2
Main Creek	OK620920-01-0180F	239.10	1661.20	2992.1	0.0106	0.3664	0.0374	0.3483	0.0443	0.0833	79.5	1921.7
Medicine Lodge River	OK621010-03-0010D	111.90	296.40	785.7	0.0156	0.7820	0.0367	0.4137	0.0730	0.1521	86.8	443.5
Otter Creek: Harper Co.	OK720500-02-0050B	268.70	311.50	1145.9	0.0111	0.0338	0.0141	0.5683	0.0210	0.0534	9.1	547.5
Otter Creek: Logan Co.	OK620910-03-0040C	105.90	81.68	582.8	0.0141	0.4627	0.0415	0.8990	0.1249	0.3390	713.0	333.2
Palo Duro Creek	OK720500-02-0500G	609.50	334.60	1718.1	0.0110	0.0222	0.0141	0.6170	0.0122	0.0470	11.2	560.7
Persimmon Creek	OK720500-01-0150G	58.01	218.60	645.4	0.0106	0.6695	0.0290	0.4601	0.0898	0.1493	55.8	411.0
Pond Creek	OK621000-05-0010D	195.90	150.10	822.9	0.0556	1.0430	0.0204	0.9680	0.1945	0.2875	79.6	356.9
Red Rock Creek: Lower	OK621200-05-0010K	131.90	87.60	611.2	0.0197	0.5194	0.0345	0.8640	0.1832	0.3236	204.3	295.1
Red Rock Creek: Upper	OK621200-05-0010M	167.50	113.60	732.4	0.0139	0.6019	0.0438	0.8445	0.1810	0.2917	153.5	325.0
Salt Creek: Lower	OK621200-04-0010F	35.55	20.89	305.3	0.0116	0.0941	0.0363	0.2663	0.0234	0.0724	54.7	249.6
Salt Creek: Upper	OK621200-04-0010P	6.22	12.08	235.4	0.0106	0.0511	0.0141	0.2135	0.0199	0.0615	11.4	214.5
Salt Fork of Arkansas River	OK621010-01-0010D	1971.00	460.90	3633.0	0.0447	0.1627	0.0141	1.4970	0.0600	0.2480	112.8	553.0
Salt Creek: Kingfisher Co.	OK620910-02-0100D	5199.00	1191.30	9152.0	0.0216	1.4150	0.0955	0.5110	0.0676	0.1342	127.2	1458.1
Salt Creek: Payne Co.	OK620900-02-0020D	58.32	27.71	359.5	0.0143	0.0986	0.0247	0.4022	0.0305	0.0821	55.1	245.7
Sand Creek	OK620920-05-0050J	154.20	1937.00	3305.0	0.0293	0.0934	0.0384	0.6960	0.0360	0.0790	27.4	2154.0
Sandy Creek	OK621010-02-0010D	98.73	123.70	546.3	0.0164	1.1410	0.0335	0.3439	0.0839	0.1311	36.0	311.9
Skeleton Creek: Lower	OK620910-03-0010F	200.50	157.40	891.8	0.0197	1.9800	0.0593	1.2120	0.3111	0.5110	537.0	393.3
Skeleton Creek: Upper	OK620910-03-0010S	270.60	202.00	1116.3	0.0235	3.4830	0.0655	0.9680	0.4779	0.5698	111.8	440.4

Site Name	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	TotHardness (mg/L)
Spring Creek	OK720500-02-0100D	36.00	31.03	357.6	0.0162	1.4130	0.0187	0.1744	0.0110	0.0312	11.4	240.8
Stillwater Creek: Lower	OK620900-04-0040C	82.40	65.05	447.8	0.0266	4.8600	0.0443	0.6710	0.7330	0.8900	243.0	251.0
Stillwater Creek: Upper	OK620900-04-0070T	37.74	42.68	328.8	0.0169	0.4540	0.0231	0.3006	0.0321	0.0943	46.6	228.3
Turkey Creek: Woods Co.	OK621010-01-0230G	112.50	1956.00	3115.0	0.0258	0.1370	0.0337	0.5303	0.0560	0.1083	39.9	2167.0
Turkey Creek: Lower	OK620910-06-0010B	228.20	166.20	861.1	0.0337	1.3800	0.0412	0.9120	0.2384	0.3647	169.1	398.7
Turkey Creek: Upper	OK620910-06-0010T	265.70	138.10	973.7	0.0641	1.1450	0.0630	1.1330	0.3012	0.4146	66.3	381.9
Uncle John's Creek	OK620910-05-0030C	62.50	174.30	636.6	0.0263	1.5900	0.0399	0.5740	0.1977	0.2919	151.2	371.6
West Clay Creek	OK621010-01-0090R	3689.00	1310.80	7313.0	0.0353	0.7680	0.0229	0.8244	0.0874	0.1519	17.4	1464.2
Wolf Creek: Lower	OK720500-02-0030M	166.66	161.00	756.4	0.0192	0.1139	0.0324	0.6975	0.0296	0.0868	19.3	363.3
Wolf Creek: Upper	OK720500-03-0010G	131.64	109.09	615.4	0.0106	0.7485	0.0362	0.4161	0.0226	0.0593	24.2	321.0
Yellowstone Creek	OK621010-01-0270C	67.48	1714.20	2664.0	0.0106	0.1310	0.0251	0.1928	0.0069	0.0205	9.8	1936.7

All of the sites but one are designated as Warm Water Aquatic Communities (WWAC) and have a critical dissolved oxygen (DO) level of 5.0 mg/L most of the year (4.0 mg/L from June 16-October 15). Stillwater Creek Upper has a Habitat Limited Aquatic Community (HLAC) designation, with a critical DO level of 3.0 mg/L most of the year (4.0 mg/L from April 1-June 15). Most of the streams were attaining the DO standard. Only the Cimarron River: Cimarron Co., Palo Duro Creek, and Sand Creek had more than 10% of samples below the criteria and were included on the state's 2008 303(d) list.

Table 8. Low dissolved oxygen values (based on OAC 785:46-15; OWRB 2007).

% samples with low DO	SiteName	WBID	Date	DO (mg/L)
6%	Chickaskia River: Lower	OK621100-00-0010B	30-Jul-07	2.77
39%	Cimarron River: Cimarron County	OK720900-00-0180C	09-Jul-07	3.79
			19-Jul-07	2.04
			06-Aug-07	1.82
			10-Sep-07	2.43
			26-Nov-07	3.59
			12-May-08	4.81
			09-Mar-09	4.08
5%	Council Creek	OK620900-02-0050H	03-Mar-08	4.71
5%	Deep Creek	OK620910-02-0250C	30-May-07	3.27
5%	Driftwood Creek	OK621010-03-0030C	07-Oct-08	3.54
5%	Otter Creek	OK720500-02-0050B	30-Sep-08	3.6
18%	Palo Duro Creek	OK720500-02-0500G	04-Jun-07	3.74
			26-Jun-07	3.32
			27-Jun-07	2.24
			16-Jun-08	3.9
5%	Persimmon Creek	OK720500-01-0150G	04-Jun-07	3.87
5%	Pond Creek	OK621000-05-0010D	09-Mar-09	3.88
39%	Sand Creek	OK620920-05-0050J	05-Jun-07	4.94
			13-Jun-07	4.17
			10-Jul-07	2.94
			07-Aug-07	1.25
			18-Sep-07	1.99
			28-Jul-08	2.89
			29-Jul-08	1.38
			29-Jul-08	1.85
			02-Sep-08	2.13
10%	West Clay Creek	OK621010-01-0090R	20-May-08	4.04
			07-Oct-08	3.84
5%	Wolf Creek: Upper	OK720500-03-0010G	04-Jun-07	3.26

Table 9 shows the geometric mean of *Enterococcus* and *E.coli* bacteria samples for each site over the two-year monitoring period. Only Salt Creek: Kingfisher Co. and Stillwater Creek Upper were designated Secondary Body Contact Recreation (SBCR); all other sites were designated Primary Body Contact Recreation (PBCR). Most creeks exceeded the geometric mean criterion set for *Enterococcus,* and many exceeded the criterion for *E. coli* as well. Only three PBCR streams, Clear Creek Beaver Co., Salt Fork of the Arkansas River, and Wolf Creek Lower, are fully attaining the Recreation designated use, meeting the standards for both types of bacteria. Both of the SBCR streams are attaining the designated Recreation use. To be listed on the state's 303(d) list, the geometric mean must exceed criteria and at least one sample must be above a set criterion value (OWRB 2007).

Table 9. Geometric mean of bacteria values for Basin Group 2 monitoring sites, 2007-2008 OCC data. An asterisk (*) indicates that the stream *meets* state standards for that bacteria type. The two streams highlighted in orange have a Secondary Body Contact Recreation (SBCR) designation use, with less stringent standards than the other streams. Most streams are impaired by bacteria, and these streams are either listed on the 2008 303(d) list or have been moved to Category 4 for bacteria after a TMDL has been produced.

Site Name	WBID	*Enterococcus*	*E. coli*	Site Name	WBID	*Enterococcus*	*E. coli*
Beaver Creek: Logan Co.	OK620900-03-0230C	364.07	330.58	Indian Creek: Woodward Co.	OK720500-01-0200D	208.87	212.72
Beaver Creek: Osage Co.	OK621210-00-0050L	163.29	158.44	Kingfisher Creek	OK620910-05-0010J	264.53	462.73
Bent Creek	OK720500-01-0070D	462.26	460.60	Kiowa Creek: Beaver Co.	OK720500-02-0130M	54.88	73.02
Bitter Creek	OK621100-00-0100G	95.07	74.15*	Kiowa Creek: Harper Co.	OK720500-02-0130C	146.53	93.33
Black Bear Creek: Lower	OK621200-03-0010D	214.22	247.11	Lagoon Creek	OK620900-01-0180J	104.04	144.97*
Black Bear Creek: Middle	OK621200-03-0010M	354.14	545.19	Long Creek	OK620920-02-0080D	151.90	161.82
Black Bear Creek: Upper	OK621200-03-0010W	400.63	434.39	Main Creek	OK620920-01-0180F	159.06	177.67*
Bois d'Arc Creek	OK621000-03-0010C	125.69	139.54	Medicine Lodge River	OK621010-03-0010D	164.08	148.70
Buffalo Creek: Lower	OK620920-05-0010G	101.86	204.26	Otter Creek: Logan Co.	OK620910-03-0040C	253.11	263.81
Buffalo Creek: Upper	OK620920-05-0010P	194.56	325.28	Otter Creek: Harper Co.	OK720500-02-0050B	396.88	434.59
Chickaskia River: Lower	OK621100-00-0010B	83.47	88.94*	Palo Duro Creek	OK720500-02-0500G	158.17	262.33
Chickaskia River: Upper	OK621100-00-0010M	93.69	87.80*	Persimmon Creek	OK720500-01-0150G	598.64	572.29
Chilocco Creek	OK621210-00-0270C	199.58	100.06	Pond Creek	OK621000-05-0010D	162.07	232.42
Cimarron River: Beaver Co.	OK620930-00-0010T	158.09	48.37	Red Rock Creek: Lower	OK621200-05-0010K	722.92	616.56
Cimarron River: Cimarron Co.	OK720900-00-0180C	65.32	59.66*	Red Rock Creek: Upper	OK621200-05-0010M	604.79	552.46
Clear Creek: Harper Co.	OK720500-02-0070G	70.91	94.49*	Salt Creek: Payne Co.	OK620900-02-0020D	197.36	247.66*
Clear Creek: Beaver Co.	OK720500-02-0300F	52.11*	30.61*	Salt Creek: Kingfisher Co. SBCR	OK620910-02-0100D	201.46*	170.98*

Site Name	WBID	*Enterococcus*	*E. coli*	Site Name	WBID	*Enterococcus*	*E. coli*
Cooper Creek	OK620910-02-0040C	314.02	473.16	Salt Creek: Lower	OK621200-04-0010F	115.23	108.83
Cottonwood Creek	OK620910-04-0010D	213.69	561.16	Salt Creek: Upper	OK621200-04-0010P	218.31	114.72*
Council Creek	OK620900-02-0050H	305.55	357.20	Salt Fork of Arkansas River	OK621010-01-0010D	11.16*	24.81*
Crooked Creek: Beaver Co.	OK620930-00-0100G	100.27	59.89	Sand Creek	OK620920-05-0050J	519.73	544.60
Crooked Creek: Grant Co.	OK621000-06-0010C	158.76	123.41*	Sandy Creek	OK621010-02-0010D	276.99	160.61
Dead Indian Creek	OK620910-05-0080D	497.09	558.42	Skeleton Creek: Lower	OK620910-03-0010F	275.12	289.61
Deep Creek	OK620910-02-0250C	208.37	236.98	Skeleton Creek: Upper	OK620910-03-0010S	138.02	209.81
Deer Creek	OK621000-04-0010D	160.45	123.94	Spring Creek	OK720500-02-0100D	241.28	366.01
Doga Creek	OK621200-02-0020C	139.75	77.74	Stillwater Creek: Lower	OK620900-04-0040C	312.16	406.16
Driftwood Creek	OK621010-03-0030C	132.76	224.93	Stillwater Creek: Upper SBCR	OK620900-04-0070T	112.71*	410.42*
Duck Pond Creek	OK720500-02-0250F	70.20	113.99*	Turkey Creek: Woods Co.	OK621010-01-0230G	555.76	661.81
Dugout Creek	OK620900-03-0080C	577.70	519.85	Turkey Creek: Lower	OK620910-06-0010B	300.48	415.32
Eagle Chief Creek: Lower	OK620920-04-0010C	182.47	98.66	Turkey Creek: Upper	OK620910-06-0010T	279.59	283.56
Eagle Chief Creek: Upper	OK620920-04-0010G	201.83	298.51	Uncle John's Creek	OK620910-05-0030C	666.21	1104.56
Euchee Creek	OK620900-01-0290D	213.14	254.88	West Clay Creek	OK621010-01-0090R	129.04	151.11
Gray Horse Creek	OK621200-01-0400C	146.38	85.58	Wolf Creek: Lower	OK720500-02-0030M	34.34*	42.64*
Griever Creek	OK620920-01-0130G	141.99	149.58	Wolf Creek: Upper	OK720500-03-0010G	87.09	74.58*
Indian Creek: Major Co.	OK620910-02-0310C	390.12	436.83	Yellowstone Creek	OK621010-01-0270C	145.39	45.52*

Select water quality parameters are summarized by box plots in Figure 2, below. To account for natural differences, sites were collated and analyzed by Level III ecoregions (Woods et al. 2005). Additionally, sites were compared to streams determined to be "high quality" sites in each ecoregion (see App. E for high quality streams details) to determine general stream condition. Figure 2 shows interquartile range plots by site for four important indicators of pollution: estimated available nitrogen (ammonia plus nitrate/nitrite), estimated total nitrogen (TKN plus nitrate/nitrite), total orthophosphorus, and total phosphorus. All elevated flow data were omitted in these analyses.

Regarding boxplot composition, the median of each site is shown by a line within the box with outliers denoted by asterisks. The mean of the high quality stream sites in a particular ecoregion is represented by a solid horizontal line, while dashed lines indicate +/- two standard deviations (representing 95% of the high quality data) for high quality site parameters. In instances where only one dashed line is present, the lower value was below zero.

Cottonwood Creek, Lower Skeleton Creek, Upper Skeleton Creek, and Lower Stillwater Creek had significantly higher nutrient values than high quality sites in the Central Great Plains (CGP) ecoregion for all four parameters shown. Pond Creek, Upper Red Rock Creek, Salt Fork of the Arkansas, Upper Turkey Creek, and Lower Turkey Creek had high total phosphorus values relative to high quality sites in the ecoregion, while Lower Eagle Chief Creek in the CGP ecoregion and Beaver Creek in the Flint Hills ecoregion had relatively high total nitrogen values. The Cimarron River site in Beaver County had significantly high nutrient values relative to the Southwestern Tablelands ecoregion high quality sites. All other streams had nutrient values that were not significantly different from the high quality sites values in each respective ecoregion.

Figure 3 shows interquartile range plots for four physical parameters (all high flow data excluded): dissolved oxygen, pH, turbidity, and total suspended solids. Lower Red Rock Creek and the Salt Fork of the Arkansas River had high turbidity values relative to high quality sites in the Central Great Plains ecoregion. The Salt Fork also had high total suspended solids. Other streams fell within the high quality range for the other parameters. These findings will be discussed further at the end of this report.

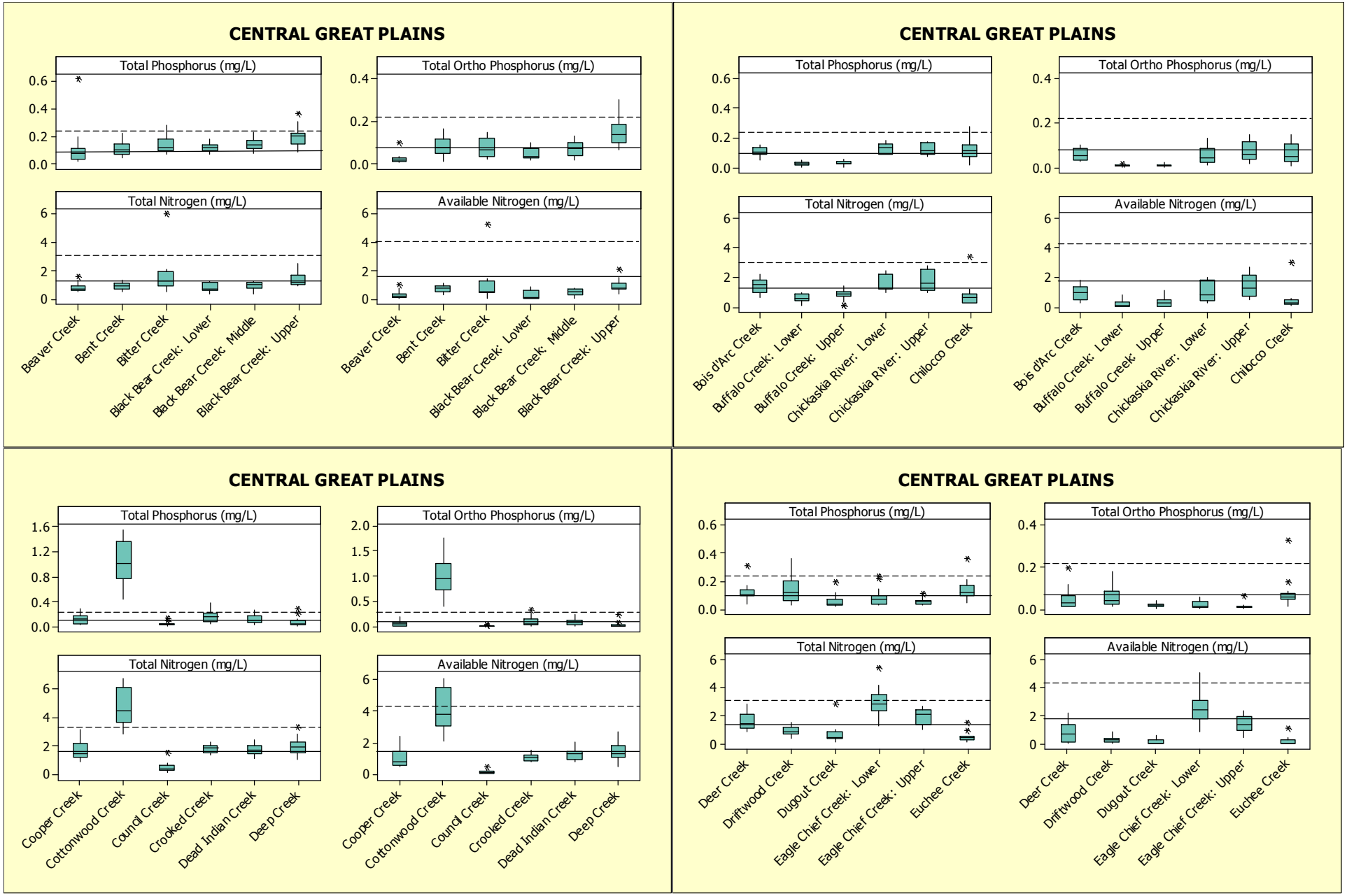


Figure 2. Nutrient parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

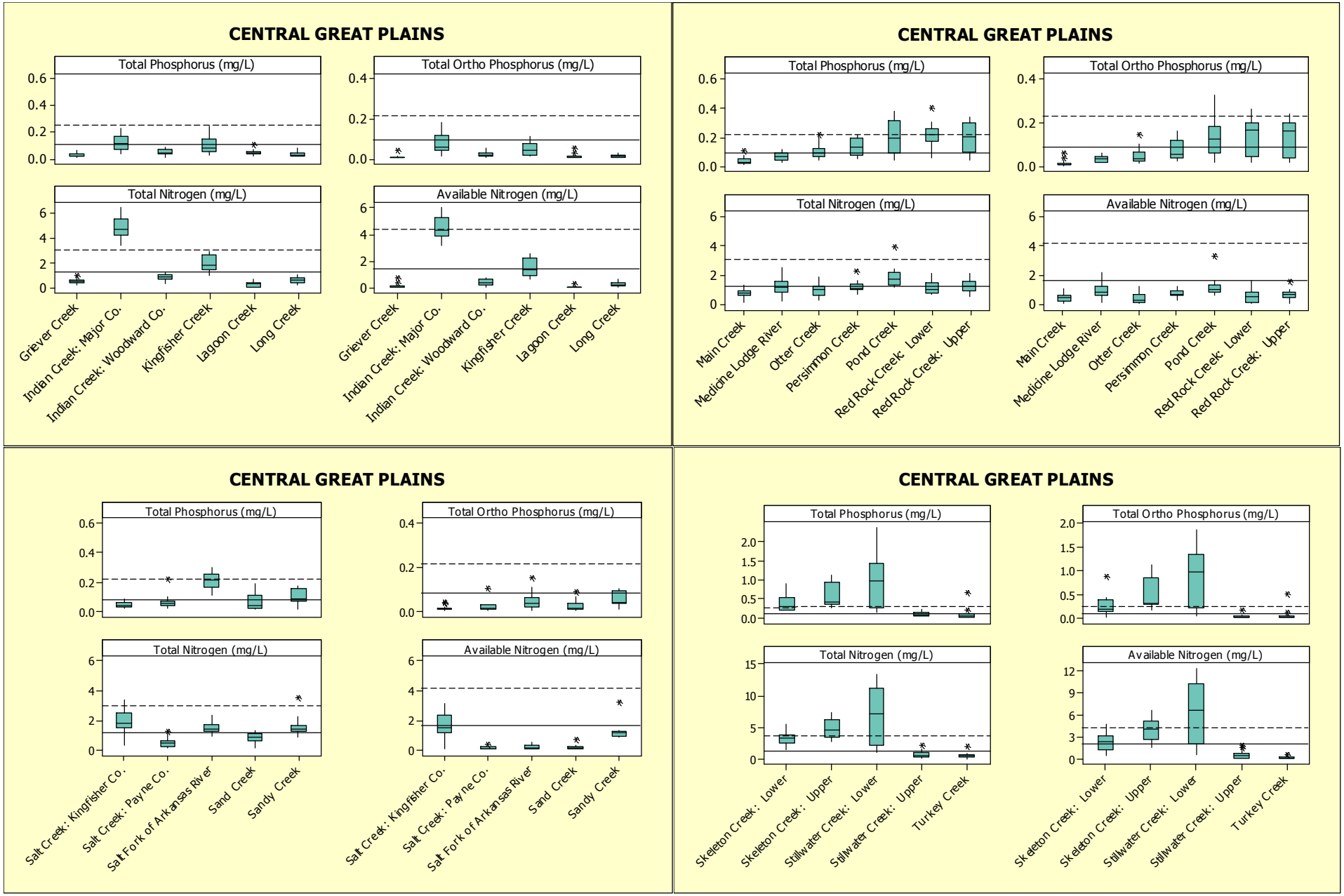


Figure 2, cont. Nutrient parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

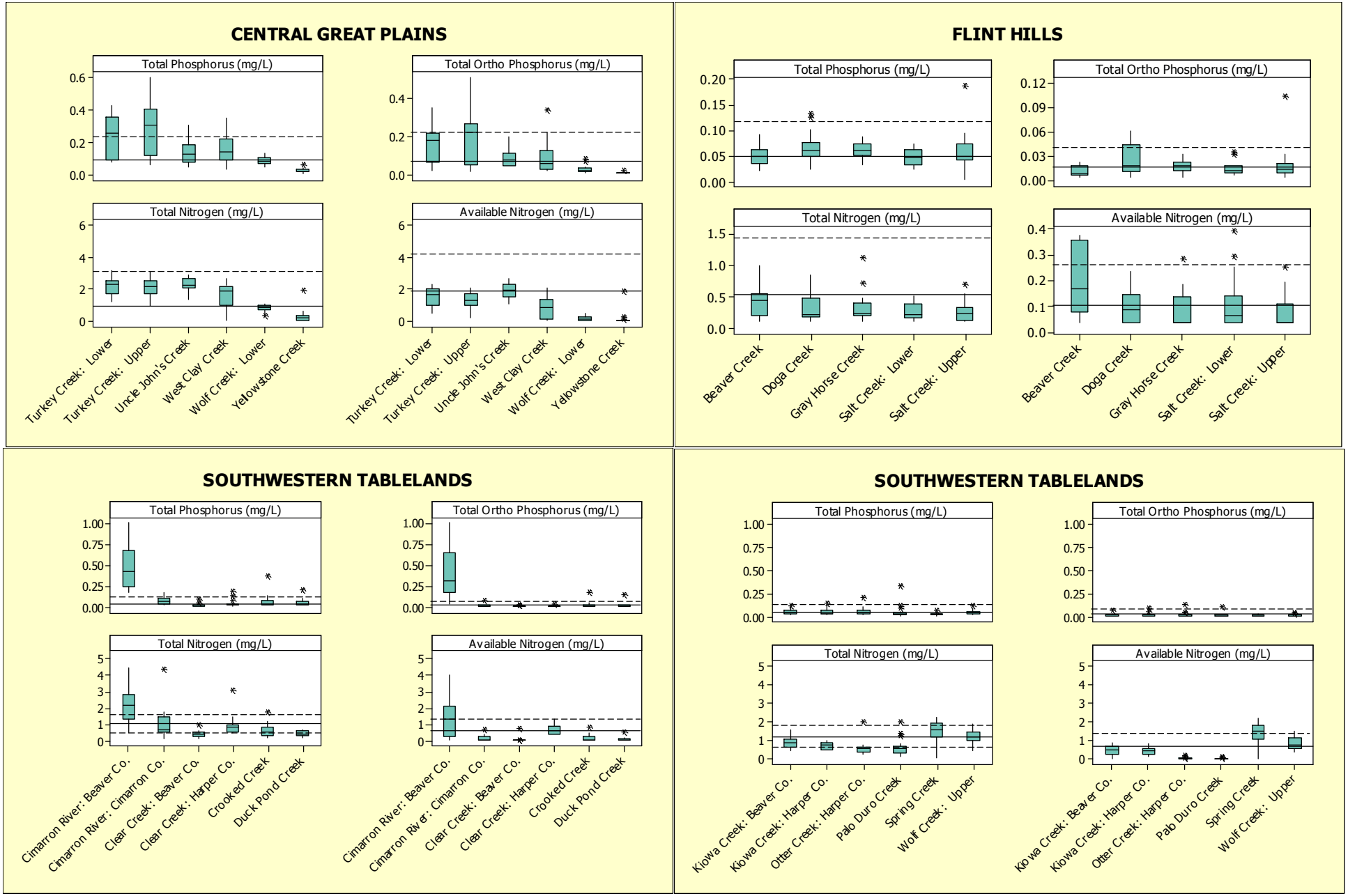


Figure 2, cont. Nutrient parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

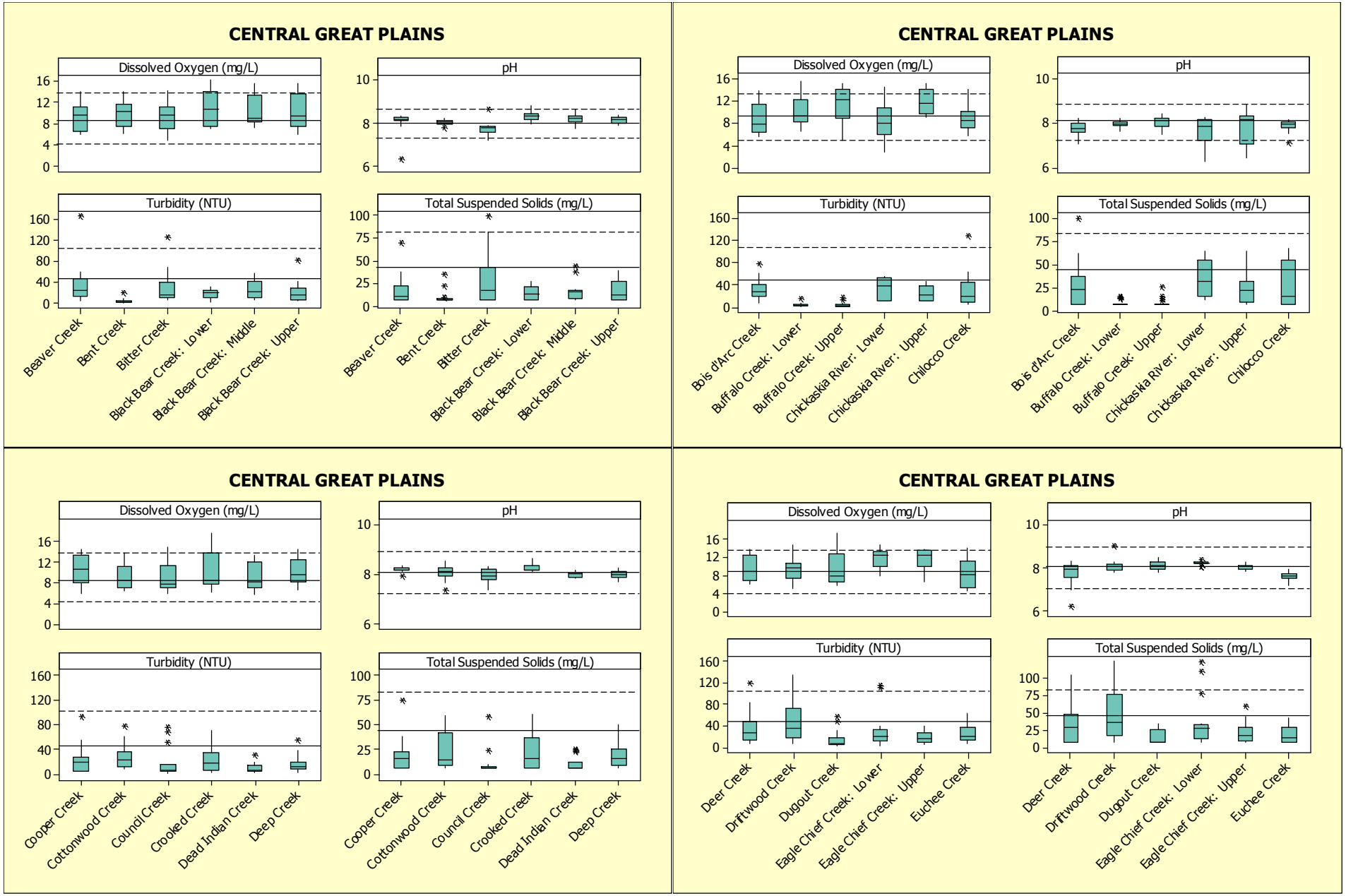


Figure 3. Selected physical water quality parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

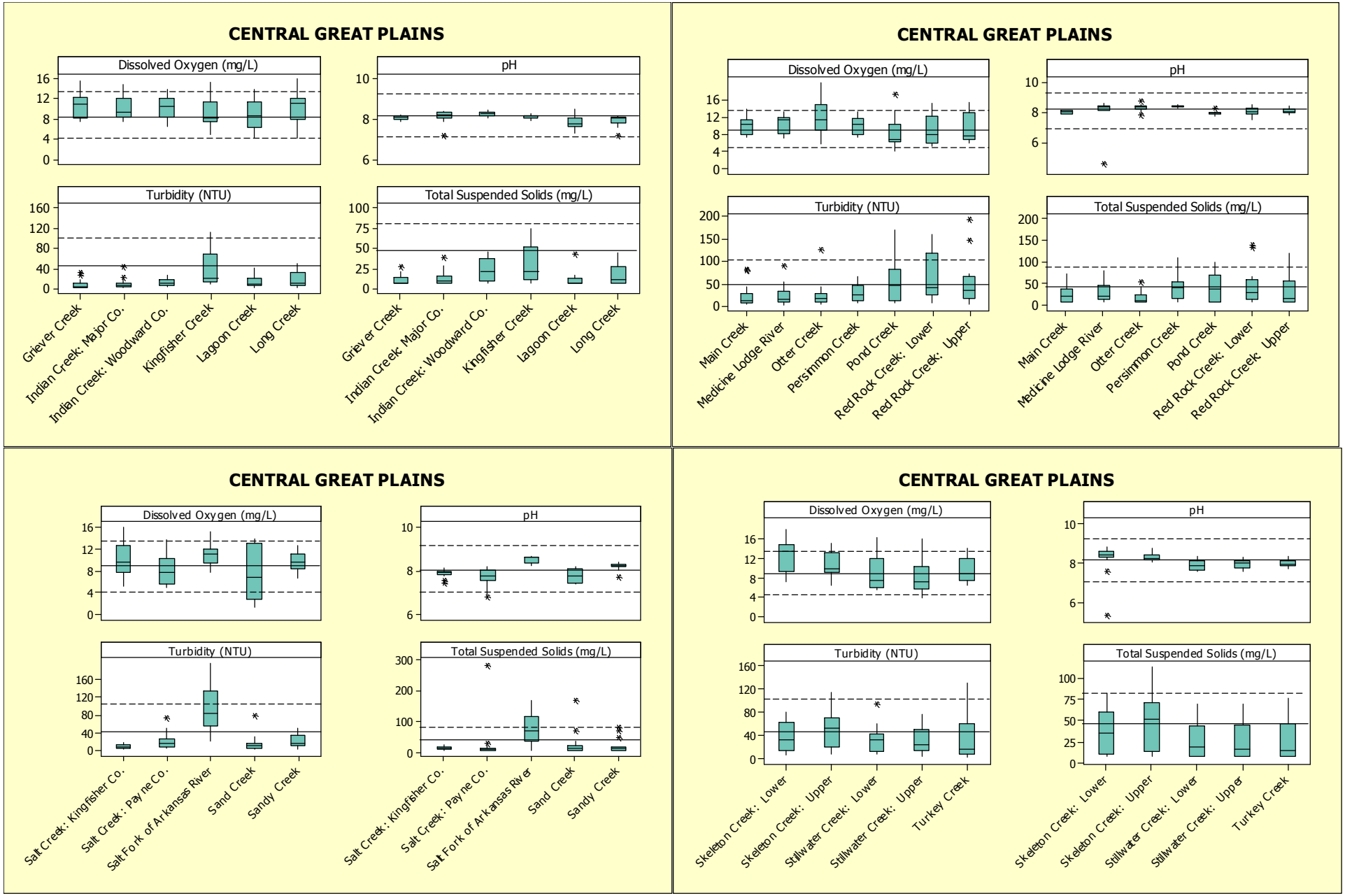


Figure 3, cont. Selected physical water quality parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

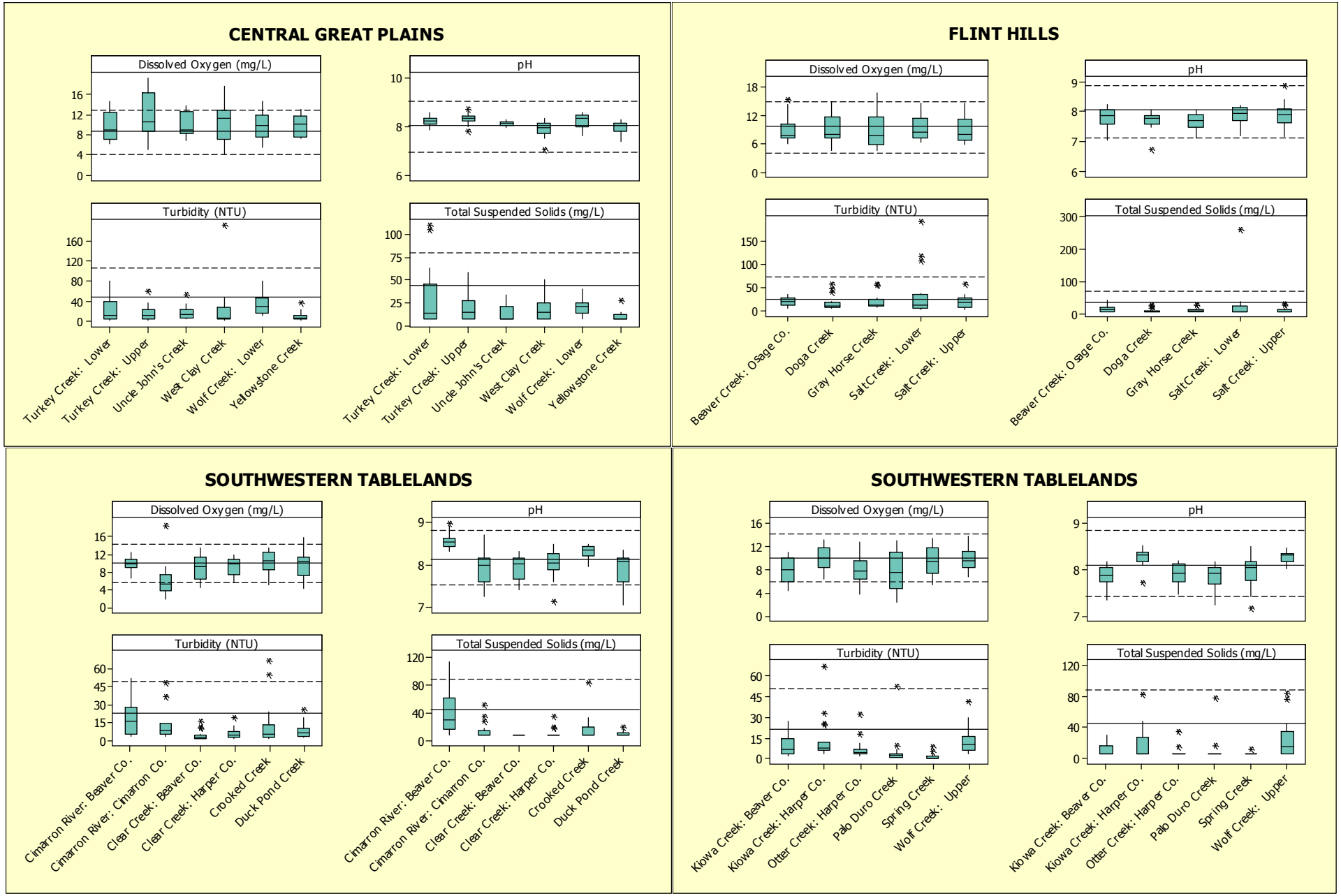


Figure 3, cont. Selected physical water quality parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero).

Table 10 shows a comparison between water quality data collected for the same site in the previous rotating basin cycle and the second cycle in order to examine whether water conditions have improved, worsened, or remained the same at a particular site. One-way ANOVAs were performed for each set of data. Only statistically significant differences between the means of each parameter are shown in the table. Level of significance is indicated by p-values, with any $p<0.050$ considered significant and $0.050<p<0.100$ considered marginally significant.

Three streams had no significant changes in any parameter from cycle 1 to cycle 2: Cimarron River in Cimarron Co., Beaver Creek in Logan Co., and Turkey Creek in Woods Co. Most streams had significantly reduced levels of some form of nitrogen in the second cycle of monitoring as compared to the first cycle. Specifically, 53 streams had significantly lower ammonia (none were significantly higher), 20 streams had significantly lower nitrate (one was significantly higher), 23 streams had significantly lower TKN (none were significantly higher), 2 streams had significantly lower nitrite (none were significantly higher), 22 streams had significantly lower total N (1 was significantly higher), and 17 streams had significantly lower available N (1 was significantly higher).

Phosphorus concentrations were also reduced at many streams in this cycle relative to the first cycle: 29 streams had significantly lower total phosphorus (none were higher) and 13 streams had lower total ortho-phosphorus (3 were higher). Seventeen streams had significantly lower turbidity and 22 had lower total suspended solids (TSS), while only one stream had increased turbidity and TSS.

Between 20 and 30% of the sites exhibited increased mineral concentrations: 21 streams had significantly higher alkalinity, 16 streams had increased chloride concentrations, 15 streams had increased sulfate, 15 streams had increased total dissolved solids (TDS), and 14 streams had increased hardness.

Table 10. Statistical comparisons of cycle one and cycle two Rotating Basin Project water quality data.

WBID	Site	Variable	RB Cycle	N	Mean	p value	
OK620900-01-0180J	Lagoon Creek	Total Phosphorus	2002-2004	19	0.0725	0.028	decreasing
			2007-2009	15	0.0433		
		Ammonia	2002-2004	19	0.0458	0.055	decreasing
			2007-2009	15	0.0106		
		Nitrate	2002-2004	19	0.2053	0.013	decreasing
			2007-2009	15	0.0413		
		TKN	2002-2004	19	0.5592	0.003	decreasing
			2007-2009	15	0.2415		
		Total Nitrogen	2002-2004	19	0.7902	0.001	decreasing
			2007-2009	15	0.3144		
		Available Nitrogen	2002-2004	19	0.2769	0.019	decreasing
			2007-2009	15	0.0835		
		TSS	2002-2004	19	19.9500	0.093	decreasing
			2007-2009	15	11.0500		
		Turbidity	2002-2004	19	38.2800	0.098	decreasing
			2007-2009	16	13.6900		
OK620900-01-0290D	Euchee Creek	DO (percent saturation)	2002-2004	20	104.2900	0.012	decreasing
			2007-2009	16	80.6400		
		Total ortho-Phosphorus	2002-2004	20	0.3337	0.010	decreasing
			2007-2009	15	0.0773		
		Total Phosphorus	2002-2004	20	0.4393	0.002	decreasing
			2007-2009	15	0.1383		
		Nitrate	2002-2004	20	0.9310	0.025	decreasing
			2007-2009	15	0.1702		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
		TKN	2002-2004	20	1.0705	0.007	decreasing
			2007-2009	15	0.3147		
		Total Nitrogen	2002-2004	20	2.0390	0.010	decreasing
			2007-2009	15	0.5100		
		Available Nitrogen	2002-2004	20	1.2060	0.034	decreasing
			2007-2009	15	0.2060		
		Flow	2002-2004	12	3.8530	0.000	decreasing
			2007-2009	16	0.0000		
OK620900-02-0020D	Salt Creek: Payne Co.	Ammonia	2002-2004	21	0.0245	0.009	decreasing
			2007-2009	18	0.0106		
		Nitrate	2002-2004	21	0.3024	0.048	decreasing
			2007-2009	18	0.0706		
		Total Nitrogen	2002-2004	21	0.7177	0.070	decreasing
			2007-2009	18	0.4418		
OK620900-02-0050H	Council Creek	Ammonia	2002-2004	20	0.0394	0.031	decreasing
			2007-2009	17	0.0109		
		TKN	2002-2004	20	0.5961	0.025	decreasing
			2007-2009	17	0.3477		
		Total Nitrogen	2002-2004	20	0.8012	0.037	decreasing
			2007-2009	17	0.5153		
		Flow	2002-2004	15	2.2430	0.093	increasing
			2007-2009	18	5.6580		
		Alkalinity	2002-2004	21	168.3000	0.012	increasing
			2007-2009	19	281.2000		
		Conductivity	2002-2004	21	556.6000	0.062	increasing
			2007-2009	17	689.4000		
		Chloride	2002-2004	20	56.7900	0.076	increasing
			2007-2009	17	74.2200		
		Sulfate	2002-2004	20	14.8790	0	increasing
			2007-2009	17	27.3120		
		TDS	2002-2004	20	316.4000	0.025	increasing
			2007-2009	17	418.4000		
		Hardness	2002-2004	20	207.1200	0.035	increasing
			2007-2009	9	307.0300		
OK620900-03-0080C	Dugout Creek	DO (percent saturation)	2002-2004	19	69.2800	0.017	increasing
			2007-2009	16	85.2100		
		Ammonia	2002-2004	20	0.0667	0.004	decreasing
			2007-2009	15	0.0106		
OK620900-04-0040C	Stillwater Creek: Lower	Total ortho-Phosphorus	2002-2004	17	1.3725	0.045	decreasing
			2007-2009	15	0.8721		
		Total Phosphorus	2002-2004	17	1.5564	0.034	decreasing
			2007-2009	15	0.9699		
		Ammonia	2002-2004	17	0.3013	0.049	decreasing
			2007-2009	15	0.0134		
		Nitrate	2002-2004	18	10.7780	0.008	decreasing
			2007-2009	15	6.0410		
		TKN	2002-2004	17	1.2033	0.005	decreasing
			2007-2009	15	0.5744		
		Total Nitrogen	2002-2004	18	12.0120	0.004	decreasing
			2007-2009	15	6.6670		
		Available Nitrogen	2002-2004	18	11.1600	0.005	decreasing
			2007-2009	15	6.1060		
OK620900-04-0070T	Stillwater Creek: Upper	DO (percent saturation)	2002-2004	18	62.6500	0.037	increasing
			2007-2009	19	78.5300		
		Total ortho-Phosphorus	2002-2004	19	0.1314	0.006	decreasing
			2007-2009	17	0.0338		
		Total Phosphorus	2002-2004	19	0.1867	0.002	decreasing
			2007-2009	17	0.0969		
		Ammonia	2002-2004	19	0.1287	0.01	decreasing
			2007-2009	17	0.0161		
		TKN	2002-2004	19	0.6095	0.008	decreasing
			2007-2009	17	0.2850		
		Turbidity	2002-2004	19	47.0600	0.035	decreasing
			2007-2009	17	30.7300		
OK620910-02-0040C	Cooper Creek	Ammonia	2002-2004	18	0.0697	0.049	decreasing

WBID	Site	Variable	RB Cycle	N	Mean	p value	
			2007-2009	16	0.0226		
		TSS	2002-2004	19	42.5800	0.017	decreasing
			2007-2009	16	19.7700		
		Turbidity	2002-2004	18	49.4500	0.033	decreasing
			2007-2009	17	22.4600		
		TDS	2002-2004	19	1546.9000	0.022	increasing
			2007-2009	16	1787.9000		
		Hardness	2002-2004	19	569.3000	0.001	increasing
			2007-2009	8	808.3000		
OK620910-02-0100D	Salt Creek: Kingfisher Co.	DO (percent saturation)	2002-2004	17	129.2200	0	decreasing
			2007-2009	17	92.4200		
		Total Phosphorus	2002-2004	19	0.0658	0.072	decreasing
			2007-2009	16	0.0410		
		Temperature	2002-2004	21	20.2200	0.036	decreasing
			2007-2009	17	12.9200		
		Ammonia	2002-2004	19	0.0280	0.062	decreasing
			2007-2009	16	0.0120		
		TKN	2002-2004	19	0.5145	0.005	decreasing
			2007-2009	16	0.2942		
OK620910-02-0250C	Deep Creek	Ammonia	2002-2004	19	0.0447	0.043	decreasing
			2007-2009	17	0.0106		
		Chloride	2002-2004	19	120.7000	0	increasing
			2007-2009	17	583.3000		
		Sulfate	2002-2004	19	732.1000	0.006	increasing
			2007-2009	17	1085.2000		
		TDS	2002-2004	19	1428.7000	0.005	increasing
			2007-2009	17	2011.2000		
		Hardness	2002-2004	19	885.1000	0.022	increasing
			2007-2009	8	1277.9000		
OK620910-02-0310C	Indian Creek: Major Co.	Ammonia	2002-2004	20	0.0212	0.001	decreasing
			2007-2009	18	0.0111		
		Chloride	2002-2004	20	152.8300	0	increasing
			2007-2009	18	195.8300		
		Sulfate	2002-2004	20	130.5000	0	increasing
			2007-2009	18	264.6100		
		TDS	2002-2004	20	742.3000	0	increasing
			2007-2009	18	904.7200		
		Hardness	2002-2004	20	387.5500	0	increasing
			2007-2009	9	494.2000		
		Flow	2002-2004	21	8.5900	0.026	increasing
			2007-2009	18	14.2360		
OK620910-03-0010F	Skeleton Creek: Lower	Ammonia	2002-2004	17	0.0538	0.078	decreasing
			2007-2009	15	0.0192		
		Turbidity	2002-2004	17	59.1200	0.072	decreasing
			2007-2009	15	37.6100		
		Alkalinity	2002-2004	18	257.8900	0	increasing
			2007-2009	15	337.4000		
		TDS	2002-2004	17	863.9000	0.061	increasing
			2007-2009	15	1008.0000		
		Hardness	2002-2004	17	354.4800	0.011	increasing
			2007-2009	7	443.2100		
OK620910-03-0010S	Skeleton Creek: Upper	Ammonia	2002-2004	19	0.0807	0.022	decreasing
			2007-2009	16	0.0260		
OK620910-03-0040C	Otter Creek: Logan Co.	Total ortho-Phosphorus	2002-2004	17	0.0970	0.046	decreasing
			2007-2009	17	0.0495		
		Total Phosphorus	2002-2004	17	0.1724	0.008	decreasing
			2007-2009	17	0.1042		
		Ammonia	2002-2004	18	0.0377	0.02	decreasing
			2007-2009	17	0.0111		
		Chloride	2002-2004	18	73.3100	0.001	increasing
			2007-2009	17	120.4000		
		Sulfate	2002-2004	18	54.5800	0.001	increasing
			2007-2009	17	92.6200		
		TDS	2002-2004	18	475.7000	0.002	increasing
			2007-2009	17	628.9000		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
		Hardness	2002-2004	18	270.6000	0.007	increasing
			2007-2009	9	370.6100		
		TSS	2002-2004	18	30.5000	0.043	decreasing
			2007-2009	17	16.4500		
		Flow	2002-2004	18	5.5100	0.016	increasing
			2007-2009	14	15.0500		
OK620910-04-0010D	Cottonwood Creek	Total Phosphorus	2002-2004	17	1.4408	0.008	decreasing
			2007-2009	13	1.0361		
		Nitrate	2002-2004	18	5.6130	0.042	decreasing
			2007-2009	13	4.1780		
		TKN	2002-2004	18	0.8303	0.024	decreasing
			2007-2009	13	0.5846		
		Total Nitrogen	2002-2004	18	6.7810	0.001	decreasing
			2007-2009	13	4.7990		
		Available Nitrogen	2002-2004	18	6.0120	0.003	decreasing
			2007-2009	13	4.2340		
OK620910-05-0010J	Kingfisher Creek	Ammonia	2002-2004	20	0.0531	0.023	decreasing
			2007-2009	15	0.0184		
		Hardness	2002-2004	20	746.9000	0.015	increasing
			2007-2009	7	982.7000		
		Flow	2002-2004	21	14.1400	0.059	increasing
			2007-2009	15	23.9100		
OK620910-05-0030C	Uncle John's Creek	Ammonia	2002-2004	20	0.0422	0.047	decreasing
			2007-2009	12	0.0126		
		Nitrate	2002-2004	20	0.9775	0	increasing
			2007-2009	12	1.8808		
		Total Nitrogen	2002-2004	20	1.4665	0	increasing
			2007-2009	12	2.2827		
		Available Nitrogen	2002-2004	20	1.0387	0.001	increasing
			2007-2009	12	1.9274		
		Flow	2002-2004	21	6.8210	0.01	increasing
			2007-2009	11	14.5020		
OK620910-05-0080D	Dead Indian Creek	Total Phosphorus	2002-2004	19	0.2151	0.052	decreasing
			2007-2009	15	0.1329		
		Ammonia	2002-2004	20	0.0880	0.002	decreasing
			2007-2009	15	0.0182		
		Conductivity	2002-2004	21	1754.3000	0.008	increasing
			2007-2009	13	2352.6000		
		Chloride	2002-2004	20	157.9700	0.007	increasing
			2007-2009	15	239.3300		
		Sulfate	2002-2004	20	431.8000	0.001	increasing
			2007-2009	15	719.4000		
		TDS	2002-2004	20	1203.9000	0.001	increasing
			2007-2009	15	1766.3000		
		Hardness	2002-2004	20	610.6000	0	increasing
			2007-2009	7	1030.2000		
		TSS	2002-2004	20	24.6000	0.01	decreasing
			2007-2009	15	11.3100		
		Turbidity	2002-2004	21	24.5000	0.014	decreasing
			2007-2009	16	10.9200		
		Flow	2002-2004	20	2.0450	0.028	increasing
			2007-2009	15	9.8720		
OK620910-06-0010B	Turkey Creek: Lower	Ammonia	2002-2004	18	0.0696	0.036	decreasing
			2007-2009	16	0.0181		
OK620910-06-0010T	Turkey Creek: Upper	Ammonia	2002-2004	20	0.0878	0.003	decreasing
			2007-2009	16	0.0223		
OK620920-01-0130G	Griever Creek	Total ortho-Phosphorus	2002-2004	18	0.0154	0.084	decreasing
			2007-2009	18	0.0079		
		Ammonia	2002-2004	19	0.0538	0.086	decreasing
			2007-2009	18	0.0126		
		Nitrate	2002-2004	19	0.2358	0.051	decreasing
			2007-2009	18	0.0924		
		TSS	2002-2004	19	23.2100	0.023	decreasing
			2007-2009	18	10.4400		
		Flow	2002-2004	20	2.6810	0.056	decreasing

WBID	Site	Variable	RB Cycle	N	Mean	p value	
			2007-2009	17	1.4860		
OK620920-01-0180F	Main Creek	Total ortho-Phosphorus	2002-2004	19	0.0314	0.093	decreasing
			2007-2009	19	0.0139		
		Total Phosphorus	2002-2004	19	0.0864	0.016	decreasing
			2007-2009	19	0.0375		
		Ammonia	2002-2004	19	0.0244	0.014	decreasing
			2007-2009	19	0.0106		
		Nitrate	2002-2004	19	0.5221	0.098	decreasing
			2007-2009	19	0.3704		
		Total Nitrogen	2002-2004	19	0.9563	0.045	decreasing
			2007-2009	19	0.7325		
		TSS	2002-2004	19	67.3700	0.047	decreasing
			2007-2009	19	25.0700		
OK620920-02-0080D	Long Creek	Total Phosphorus	2002-2004	20	0.0807	0.1	decreasing
			2007-2009	20	0.0313		
		Nitrate	2002-2004	20	0.5750	0.004	decreasing
			2007-2009	20	0.2499		
		Total Nitrogen	2002-2004	20	1.1790	0.01	decreasing
			2007-2009	20	0.6317		
		Available Nitrogen	2002-2004	20	0.6352	0.006	decreasing
			2007-2009	20	0.2965		
		Flow	2002-2004	20	3.7060	0.046	decreasing
			2007-2009	17	1.8340		
OK620920-04-0010C	Eagle Chief Creek: Lower	Flow	2002-2004	17	39.2200	0.031	decreasing
			2007-2009	17	22.1900		
OK620920-04-0010G	Eagle Chief Creek: Upper	Total ortho-Phosphorus	2002-2004	19	0.0300	0.1	decreasing
			2007-2009	17	0.0141		
		Total Phosphorus	2002-2004	19	0.0922	0.033	decreasing
			2007-2009	17	0.0567		
		Ammonia	2002-2004	21	0.0391	0.004	decreasing
			2007-2009	17	0.0142		
		Total Nitrogen	2002-2004	21	2.3617	0.048	decreasing
			2007-2009	17	1.9343		
		Available Nitrogen	2002-2004	21	1.8730	0.038	decreasing
			2007-2009	17	1.4205		
OK620920-05-0010G	Buffalo Creek: Lower	Total ortho-Phosphorus	2002-2004	18	0.0176	0.077	decreasing
			2007-2009	19	0.0081		
		Total Phosphorus	2002-2004	18	0.0601	0.004	decreasing
			2007-2009	19	0.0261		
		Ammonia	2002-2004	19	0.0325	0.029	decreasing
			2007-2009	19	0.0114		
		TKN	2002-2004	19	0.5960	0.001	decreasing
			2007-2009	19	0.3740		
		Total Nitrogen	2002-2004	19	0.9413	0.001	decreasing
			2007-2009	19	0.6105		
		Chloride	2002-2004	19	168.5300	0.001	increasing
			2007-2009	19	215.6300		
		Sulfate	2002-2004	19	1327.8000	0.003	increasing
			2007-2009	19	1628.6000		
		TDS	2002-2004	19	2416.1000	0.004	increasing
			2007-2009	19	2804.3000		
		Hardness	2002-2004	19	1526.2000	0.009	increasing
			2007-2009	11	1856.0000		
		TSS	2002-2004	19	23.6800	0.027	decreasing
			2007-2009	19	8.5800		
		Turbidity	2002-2004	19	11.8000	0.046	decreasing
			2007-2009	20	4.2500		
		Flow	2002-2004	18	12.9120	0.007	decreasing
			2007-2009	18	7.2340		
OK620920-05-0010P	Buffalo Creek: Upper	Total Phosphorus	2002-2004	18	0.0647	0.002	decreasing
			2007-2009	19	0.0310		
		Nitrate	2002-2004	19	0.4811	0.081	decreasing
			2007-2009	19	0.2916		
		TKN	2002-2004	19	0.6615	0.013	decreasing
			2007-2009	19	0.4929		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
		Total Nitrogen	2002-2004	19	1.1594	0.009	decreasing
			2007-2009	19	0.8225		
		TSS	2002-2004	19	23.8900	0.012	decreasing
			2007-2009	19	9.0600		
		Turbidity	2002-2004	19	8.4860	0.094	decreasing
			2007-2009	20	4.3800		
		Flow	2002-2004	20	7.2020	0.078	decreasing
			2007-2009	18	4.4960		
OK620920-05-0050G	Sand Creek	DO (percent saturation)	2002-2004	19	100.4400	0.004	decreasing
			2007-2009	22	70.1100		
		Ammonia	2002-2004	20	0.0695	0.029	decreasing
			2007-2009	19	0.0289		
		Nitrate	2002-2004	20	0.2480	0.006	decreasing
			2007-2009	19	0.0752		
		Total Nitrogen	2002-2004	20	1.0064	0.056	decreasing
			2007-2009	19	0.7933		
		Available Nitrogen	2002-2004	20	0.3365	0.009	decreasing
			2007-2009	19	0.1438		
		Flow	2002-2004	17	1.2220	0.075	decreasing
			2007-2009	16	0.5740		
OK620930-00-0100G	Crooked Creek: Beaver Co.	Ammonia	2002-2004	22	0.0311	0.02	decreasing
			2007-2009	20	0.0106		
		Chloride	2002-2004	22	1036.6000	0.047	increasing
			2007-2009	20	1247.0000		
		TDS	2002-2004	22	2244.8000	0.013	increasing
			2007-2009	20	2512.1000		
OK621000-03-0010C	Bois d'Arc Creek	Total Phosphorus	2002-2004	19	0.1933	0.034	decreasing
			2007-2009	14	0.1085		
		Ammonia	2002-2004	19	0.0834	0.025	decreasing
			2007-2009	14	0.0190		
		Alkalinity	2002-2004	20	162.6500	0	increasing
			2007-2009	15	247.0000		
		Conductivity	2002-2004	19	1191.3000	0.018	increasing
			2007-2009	15	1501.5000		
		TSS	2002-2004	19	66.6800	0.065	decreasing
			2007-2009	14	30.7300		
OK621000-04-0010D	Deer Creek	Ammonia	2002-2004	20	0.0607	0.01	decreasing
			2007-2009	12	0.0131		
		Alkalinity	2002-2004	21	186.8100	0	increasing
			2007-2009	13	270.3100		
		Conductivity	2002-2004	20	1347.5000	0.01	increasing
			2007-2009	13	1777.3000		
		Chloride	2002-2004	20	223.0000	0.01	increasing
			2007-2009	12	324.7000		
		Sulfate	2002-2004	20	96.3700	0.023	increasing
			2007-2009	12	127.5700		
		TDS	2002-2004	20	775.8000	0.024	increasing
			2007-2009	12	967.0000		
		Flow	2002-2004	21	4.9430	0.044	increasing
			2007-2009	13	10.7320		
OK621000-05-0010D	Pond Creek	Ammonia	2002-2004	17	0.0939	0.079	decreasing
			2007-2009	15	0.0215		
		Nitrite	2002-2004	17	0.0429	0.062	decreasing
			2007-2009	15	0.0141		
		Alkalinity	2002-2004	18	269.8000	0.011	increasing
			2007-2009	16	363.1000		
		Chloride	2002-2004	17	153.8700	0.02	increasing
			2007-2009	15	215.2900		
OK621000-06-0010C	Crooked Creek: Grant Co.	Ammonia	2002-2004	14	0.0774	0.071	decreasing
			2007-2009	15	0.0345		
		Nitrite	2002-2004	14	0.0479	0.061	decreasing
			2007-2009	15	0.0189		
		Total Nitrogen	2002-2004	14	2.7480	0.1	decreasing
			2007-2009	15	1.8410		
		Available Nitrogen	2002-2004	14	2.0650	0.08	decreasing

WBID	Site	Variable	RB Cycle	N	Mean	p value	
			2007-2009	15	1.0910		
		Alkalinity	2002-2004	15	278.1500	0.025	increasing
			2007-2009	16	349.5600		
		Chloride	2002-2004	14	139.7000	0.001	increasing
			2007-2009	15	291.5000		
		Turbidity	2002-2004	14	84.6000	0.057	decreasing
			2007-2009	16	23.1200		
OK621010-01-0010D	Salt Fork of Arkansas River	Turbidity	2002-2004	16	151.4800	0.051	decreasing
			2007-2009	16	89.6300		
		Alkalinity	2002-2004	16	120.0600	0.015	increasing
			2007-2009	16	153.8800		
OK621010-01-0090R	West Clay Creek	Total ortho-Phosphorus	2002-2004	16	0.0334	0.02	increasing
			2007-2009	20	0.0874		
		Alkalinity	2002-2004	18	286.1100	0.076	increasing
			2007-2009	21	340.0100		
		Conductivity	2002-2004	18	8552.0000	0.07	decreasing
			2007-2009	19	4913.0000		
		Sulfate	2002-2004	17	1092.8000	0.07	increasing
			2007-2009	20	1310.8000		
		Hardness	2002-2004	17	1244.8000	0.078	increasing
			2007-2009	11	1432.6000		
OK621010-01-0270C	Yellowstone Creek	Total Phosphorus	2002-2004	19	0.0366	0.021	decreasing
			2007-2009	17	0.0205		
		Ammonia	2002-2004	19	0.0202	0.045	decreasing
			2007-2009	17	0.0106		
		TSS	2002-2004	19	15.6840	0.035	decreasing
			2007-2009	17	9.7560		
OK621010-02-0010D	Sandy Creek	Alkalinity	2002-2004	20	209.1500	0.025	increasing
			2007-2009	16	244.2500		
OK621010-03-0010D	Medicine Lodge Creek	DO (percent saturation)	2002-2004	15	88.1300	0.075	increasing
			2007-2009	14	95.8300		
		Total ortho-Phosphorus	2002-2004	18	0.0737	0.064	decreasing
			2007-2009	14	0.0346		
		Total Phosphorus	2002-2004	18	0.1354	0.006	decreasing
			2007-2009	14	0.0707		
OK621010-03-0030C	Driftwood Creek	Ammonia	2002-2004	18	0.0816	0.006	decreasing
			2007-2009	18	0.0287		
		Alkalinity	2002-2004	19	249.5800	0.007	increasing
			2007-2009	19	314.5800		
		Chloride	2002-2004	18	90.0900	0.083	increasing
			2007-2009	18	141.9700		
OK621100-00-0010B	Chickaskia River: Lower	Ammonia	2002-2004	15	0.0584	0.063	decreasing
			2007-2009	9	0.0123		
		Alkalinity	2002-2004	17	161.5900	0.003	increasing
			2007-2009	9	220.1100		
OK621100-00-0010M	Chickaskia River: Upper	Ammonia	2002-2004	14	0.0549	0.084	decreasing
			2007-2009	10	0.0106		
		TKN	2002-2004	14	0.6714	0.079	decreasing
			2007-2009	10	0.3528		
		Alkalinity	2002-2004	16	171.1300	0.001	increasing
			2007-2009	10	225.5000		
OK621100-00-0100G	Bitter Creek	Ammonia	2002-2004	18	0.0964	0.035	decreasing
			2007-2009	14	0.0381		
		TKN	2002-2004	18	0.8638	0.078	decreasing
			2007-2009	14	0.6800		
		Alkalinity	2002-2004	18	174.8300	0.006	increasing
			2007-2009	15	228.4000		
		Flow	2002-2004	17	9.0130	0.092	increasing
			2007-2009	14	13.9340		
OK621200-01-0400C	Gray Horse Creek	DO (percent saturation)	2002-2004	17	68.8600	0.057	increasing
			2007-2009	16	83.3500		
		Total Phosphorus	2002-2004	20	0.0980	0.002	decreasing
			2007-2009	15	0.0612		
		Ammonia	2002-2004	20	0.0453	0.005	decreasing
			2007-2009	15	0.0106		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
		Nitrate	2002-2004	20	0.2165	0.012	decreasing
			2007-2009	15	0.0592		
		TKN	2002-2004	20	0.5379	0.001	decreasing
			2007-2009	15	0.2664		
		Total Nitrogen	2002-2004	20	0.7775	0	decreasing
			2007-2009	15	0.3448		
		Available Nitrogen	2002-2004	20	0.2848	0.003	decreasing
			2007-2009	15	0.0890		
		Alkalinity	2002-2004	21	113.1400	0	increasing
			2007-2009	16	170.1300		
		TSS	2002-2004	20	19.8000	0.053	decreasing
			2007-2009	15	12.1700		
		Turbidity	2002-2004	18	34.3300	0.059	decreasing
			2007-2009	14	20.8700		
		Flow	2002-2004	21	1.6280	0.072	increasing
			2007-2009	16	7.0320		
OK621200-02-0020C	Doga Creek	DO (percent saturation)	2002-2004	16	68.4300	0.004	increasing
			2007-2009	16	85.9500		
		Total Phosphorus	2002-2004	18	0.0931	0.063	decreasing
			2007-2009	15	0.0663		
		Ammonia	2002-2004	18	0.0517	0.059	decreasing
			2007-2009	15	0.0123		
		Nitrate	2002-2004	18	0.2244	0.024	decreasing
			2007-2009	15	0.0629		
		TKN	2002-2004	18	0.5811	0.002	decreasing
			2007-2009	15	0.2444		
		Total Nitrogen	2002-2004	18	0.8266	0.001	decreasing
			2007-2009	14	0.3343		
		Available Nitrogen	2002-2004	18	0.2973	0.014	decreasing
			2007-2009	14	0.0991		
		Chloride	2002-2004	18	13.7060	0.001	increasing
			2007-2009	15	26.5130		
		Sulfate	2002-2004	18	11.7000	0.046	increasing
			2007-2009	15	27.2100		
		TDS	2002-2004	18	236.1100	0	increasing
			2007-2009	15	341.8000		
		Alkalinity	2002-2004	19	116.4700	0	increasing
			2007-2009	16	218.8100		
		Conductivity	2002-2004	19	372.8000	0.001	increasing
			2007-2009	15	544.5000		
		Hardness	2002-2004	18	163.9800	0.015	increasing
			2007-2009	9	229.4700		
		TSS	2002-2004	18	28.5600	0.024	decreasing
			2007-2009	15	10.7200		
		Turbidity	2002-2004	19	41.8700	0.004	decreasing
			2007-2009	16	18.1100		
OK621200-03-0010D	Black Bear Creek: Lower	DO (percent saturation)	2002-2004	16	87.0000	0.038	increasing
			2007-2009	12	101.9500		
		Total ortho-Phosphorus	2002-2004	16	0.1198	0.004	decreasing
			2007-2009	11	0.0454		
		Total Phosphorus	2002-2004	16	0.2180	0	decreasing
			2007-2009	11	0.1136		
		Ammonia	2002-2004	16	0.0460	0.011	decreasing
			2007-2009	11	0.0119		
		Total Nitrogen	2002-2004	16	1.2576	0.01	decreasing
			2007-2009	11	0.8489		
		Alkalinity	2002-2004	17	146.7100	0	increasing
			2007-2009	12	264.5800		
		Conductivity	2002-2004	17	679.8000	0.007	increasing
			2007-2009	12	931.3000		
		Chloride	2002-2004	16	90.5200	0.025	increasing
			2007-2009	11	143.7200		
		Sulfate	2002-2004	16	23.8900	0	increasing
			2007-2009	11	42.8700		
		TDS	2002-2004	16	369.6000	0.002	increasing

WBID	Site	Variable	RB Cycle	N	Mean	p value	
			2007-2009	11	545.0000		
		Hardness	2002-2004	16	185.9000	0.002	increasing
			2007-2009	5	288.4200		
		TSS	2002-2004	14	40.7100	0.057	decreasing
			2007-2009	11	14.3100		
		Turbidity	2002-2004	15	77.6100	0.019	decreasing
			2007-2009	12	18.1300		
OK621200-03-0010M	Black Bear Creek: Middle	Total Phosphorus	2002-2004	14	0.2446	0.045	decreasing
			2007-2009	12	0.1376		
		Ammonia	2002-2004	14	0.0536	0.052	decreasing
			2007-2009	12	0.0129		
		TKN	2002-2004	14	0.8354	0.002	decreasing
			2007-2009	12	0.4923		
		Total Nitrogen	2002-2004	14	1.4576	0.018	decreasing
			2007-2009	12	0.9608		
		Alkalinity	2002-2004	17	195.1800	0	increasing
			2007-2009	13	300.6900		
		Sulfate	2002-2004	14	33.4900	0	increasing
			2007-2009	12	60.6600		
		TSS	2002-2004	14	42.8600	0.02	decreasing
			2007-2009	12	17.6800		
		Turbidity	2002-2004	16	70.3500	0.007	decreasing
			2007-2009	12	27.4100		
		Flow	2002-2004	15	12.4100	0.055	increasing
			2007-2009	7	28.5100		
OK621200-03-0010W	Black Bear Creek: Upper	Total ortho-Phosphorus	2002-2004	14	0.2943	0.065	decreasing
			2007-2009	13	0.1475		
		Total Phosphorus	2002-2004	14	0.4063	0.019	decreasing
			2007-2009	13	0.1965		
		Ammonia	2002-2004	16	0.0713	0.024	decreasing
			2007-2009	13	0.0138		
		TKN	2002-2004	16	0.7465	0.044	decreasing
			2007-2009	13	0.4806		
		Total Nitrogen	2002-2004	16	2.0609	0.046	decreasing
			2007-2009	13	1.4110		
		Alkalinity	2002-2004	19	220.5300	0.001	increasing
			2007-2009	13	293.5400		
		Sulfate	2002-2004	16	41.7100	0.001	increasing
			2007-2009	13	64.6200		
		Temperature	2002-2004	19	19.8700	0.081	decreasing
			2007-2009	13	13.3200		
OK621200-04-0010F	Salt Creek: Lower	Total Phosphorus	2002-2004	19	0.0934	0.01	decreasing
			2007-2009	17	0.0471		
		Ammonia	2002-2004	19	0.0457	0.034	decreasing
			2007-2009	17	0.0106		
		Nitrate	2002-2004	19	0.2474	0.013	decreasing
			2007-2009	17	0.0657		
		TKN	2002-2004	19	0.4606	0.001	decreasing
			2007-2009	17	0.1606		
		Total Nitrogen	2002-2004	19	0.7353	0	decreasing
			2007-2009	17	0.2653		
		Available Nitrogen	2002-2004	19	0.3204	0.015	decreasing
			2007-2009	17	0.1153		
		Alkalinity	2002-2004	19	132.8900	0	increasing
			2007-2009	18	192.8900		
		Hardness	2002-2004	19	190.8200	0.009	increasing
			2007-2009	10	263.5700		
		Flow	2002-2004	16	8.0900	0.032	increasing
			2007-2009	15	37.1200		
OK621200-04-0010P	Salt Creek: Upper	DO (percent saturation)	2002-2004	16	66.0900	0	increasing
			2007-2009	17	89.1200		
		Ammonia	2002-2004	17	0.0341	0.058	decreasing
			2007-2009	16	0.0106		
		Nitrate	2002-2004	17	0.2124	0.045	decreasing
			2007-2009	16	0.0547		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
		TKN	2002-2004	17	0.3664	0.019	decreasing
			2007-2009	16	0.2028		
		Total Nitrogen	2002-2004	17	0.6023	0.002	decreasing
			2007-2009	16	0.2716		
		Available Nitrogen	2002-2004	17	0.2700	0.024	decreasing
			2007-2009	16	0.0795		
		TSS	2002-2004	17	17.3530	0.074	decreasing
			2007-2009	16	11.9770		
		Flow	2002-2004	10	0.5270	0.001	increasing
			2007-2009	17	14.0150		
OK621200-05-0010K	Red Rock Creek: Lower	DO (percent saturation)	2002-2004	18	68.9200	0.062	increasing
			2007-2009	14	81.1600		
		Total Phosphorus	2002-2004	17	0.2950	0.06	decreasing
			2007-2009	13	0.2169		
		Ammonia	2002-2004	17	0.0924	0.019	decreasing
			2007-2009	13	0.0114		
		TKN	2002-2004	17	0.9671	0.048	decreasing
			2007-2009	13	0.6462		
		Total Nitrogen	2002-2004	17	1.7794	0.099	decreasing
			2007-2009	13	1.1788		
		Alkalinity	2002-2004	18	209.5000	0.007	increasing
			2007-2009	14	310.0700		
		Conductivity	2002-2004	17	906.5000	0.061	increasing
			2007-2009	12	1245.7000		
		Chloride	2002-2004	17	101.5300	0.024	increasing
			2007-2009	13	173.1500		
		Sulfate	2002-2004	17	70.3900	0.048	increasing
			2007-2009	13	113.3100		
		TDS	2002-2004	17	544.6000	0.027	increasing
			2007-2009	13	751.6000		
		Turbidity	2002-2004	18	183.5000	0.041	decreasing
			2007-2009	13	67.6000		
OK621200-05-0010M	Red Rock Creek: Upper	Ammonia	2002-2004	17	0.0680	0.037	decreasing
			2007-2009	14	0.0120		
		TKN	2002-2004	17	0.9231	0.043	decreasing
			2007-2009	14	0.6371		
		Chloride	2002-2004	17	124.7200	0.01	increasing
			2007-2009	14	204.5000		
		Sulfate	2002-2004	17	93.6500	0.041	increasing
			2007-2009	14	138.0200		
		TDS	2002-2004	17	650.4000	0.029	increasing
			2007-2009	14	853.4000		
		Turbidity	2002-2004	18	138.3000	0.048	decreasing
			2007-2009	14	53.6000		
		Flow	2002-2004	18	6.9300	0.041	increasing
			2007-2009	13	18.0800		
OK621210-00-0050L	Beaver Creek	DO (percent saturation)	2002-2004	17	61.4900	0.002	increasing
			2007-2009	12	89.6800		
		Total Phosphorus	2002-2004	17	0.0917	0.009	decreasing
			2007-2009	12	0.0518		
		Ammonia	2002-2004	17	0.0413	0.09	decreasing
			2007-2009	12	0.0106		
		TKN	2002-2004	17	0.4465	0.021	decreasing
			2007-2009	12	0.2424		
		Total Nitrogen	2002-2004	17	0.6965	0.043	decreasing
			2007-2009	12	0.4282		
		Flow	2002-2004	14	5.0290	0.098	increasing
			2007-2009	10	10.9330		
OK621210-00-0270C	Chilocco Creek	DO (percent saturation)	2002-2004	16	57.5100	0.001	increasing
			2007-2009	15	87.0400		
		Total ortho-Phosphorus	2002-2004	17	0.1220	0.053	decreasing
			2007-2009	14	0.0636		
		Total Phosphorus	2002-2004	17	0.1864	0.03	decreasing
			2007-2009	14	0.1170		
		Ammonia	2002-2004	17	0.0905	0.027	decreasing

WBID	Site	Variable	RB Cycle	N	Mean	p value	
			2007-2009	14	0.0164		
		TKN	2002-2004	17	0.5501	0.021	decreasing
			2007-2009	14	0.3156		
		Alkalinity	2002-2004	18	155.4400	0.011	increasing
			2007-2009	15	224.8000		
		Conductivity	2002-2004	17	531.3000	0.008	increasing
			2007-2009	14	852.7000		
		Chloride	2002-2004	17	31.9300	0.053	increasing
			2007-2009	14	100.0400		
		Sulfate	2002-2004	17	27.3600	0.003	increasing
			2007-2009	14	51.3500		
		TDS	2002-2004	17	340.0000	0.021	increasing
			2007-2009	14	488.2000		
		Hardness	2002-2004	17	227.7800	0.018	increasing
			2007-2009	9	288.0800		
		Flow	2002-2004	12	1.1990	0.004	increasing
			2007-2009	12	5.8640		
OK720500-01-0070D	Bent Creek	Ammonia	2002-2004	18	0.0632	0.046	decreasing
			2007-2009	18	0.0235		
		TKN	2002-2004	18	0.4243	0.071	decreasing
			2007-2009	18	0.2405		
		TSS	2002-2004	19	27.3200	0.048	decreasing
			2007-2009	18	9.8300		
OK720500-01-0150G	Persimmon Creek	Total ortho-Phosphorus	2002-2004	18	0.0477	0.028	increasing
			2007-2009	18	0.0794		
		Ammonia	2002-2004	18	0.0258	0.009	decreasing
			2007-2009	18	0.0106		
OK720500-01-0200D	Indian Creek	Total ortho-Phosphorus	2002-2004	17	0.0105	0.018	increasing
			2007-2009	20	0.0202		
		Ammonia	2002-2004	17	0.0389	0.012	decreasing
			2007-2009	20	0.0106		
		TSS	2002-2004	17	13.4700	0.009	increasing
			2007-2009	20	23.0600		
		Turbidity	2002-2004	18	6.7160	0.001	increasing
			2007-2009	21	13.1200		
OK720500-02-0050B	Otter Creek: Harper Co.	Nitrate	2002-2004	14	0.2350	0.046	decreasing
			2007-2009	18	0.0338		
		Available Nitrogen	2002-2004	14	0.3379	0.059	decreasing
			2007-2009	18	0.0590		
OK720500-02-0070G	Clear Creek: Harper Co.	Ammonia	2002-2004	19	0.0204	0.014	decreasing
			2007-2009	20	0.0124		
		Nitrate	2002-2004	19	1.1363	0	decreasing
			2007-2009	20	0.6145		
		Total Nitrogen	2002-2004	19	1.3679	0.002	decreasing
			2007-2009	20	0.8987		
		Available Nitrogen	2002-2004	19	1.1741	0	decreasing
			2007-2009	20	0.6634		
		TSS	2002-2004	19	18.4200	0.017	decreasing
			2007-2009	20	9.5100		
		Turbidity	2002-2004	20	8.4440	0.062	decreasing
			2007-2009	21	5.1260		
OK720500-02-0100D	Spring Creek	DO (percent saturation)	2002-2004	17	103.8400	0.004	decreasing
			2007-2009	20	86.1600		
		Total Phosphorus	2002-2004	18	0.0464	0.02	decreasing
			2007-2009	18	0.0252		
		Ammonia	2002-2004	18	0.0254	0.021	decreasing
			2007-2009	18	0.0111		
		TKN	2002-2004	18	0.2376	0.004	decreasing
			2007-2009	18	0.1230		
		Total Nitrogen	2002-2004	18	1.9632	0.019	decreasing
			2007-2009	18	1.5543		
		Available Nitrogen	2002-2004	18	1.7509	0.089	decreasing
			2007-2009	18	1.4425		
		TSS	2002-2004	18	13.8330	0.018	decreasing
			2007-2009	18	7.4000		

WBID	Site	Variable	RB Cycle	N	Mean	p value	
OK720500-02-0130C	Kiowa Creek: Harper Co.	DO (percent saturation)	2002-2004	18	88.9700	0	decreasing
			2007-2009	19	74.2400		
OK720500-02-0130K	Kiowa Creek: Beaver Co.	Total ortho-Phosphorus	2002-2004	19	0.0275	0.098	decreasing
			2007-2009	18	0.0153		
		Total Phosphorus	2002-2004	19	0.0752	0.025	decreasing
			2007-2009	18	0.0471		
		Ammonia	2002-2004	18	0.0223	0.026	decreasing
			2007-2009	18	0.0119		
		Nitrate	2002-2004	19	0.8474	0	decreasing
			2007-2009	18	0.4269		
		Total Nitrogen	2002-2004	19	1.2151	0.006	decreasing
			2007-2009	18	0.8838		
		Available Nitrogen	2002-2004	19	0.9058	0	decreasing
			2007-2009	18	0.4858		
		TSS	2002-2004	19	21.5800	0.041	decreasing
			2007-2009	18	11.2700		
		Flow	2002-2004	19	6.5280	0	decreasing
			2007-2009	16	3.9990		
OK720500-02-0250F	Duck Pond Creek	DO (percent saturation)	2002-2004	20	68.8100	0	increasing
			2007-2009	21	93.7000		
		Nitrate	2002-2004	20	0.1260	0.071	decreasing
			2007-2009	20	0.0468		
		Total Nitrogen	2002-2004	20	0.5607	0.04	decreasing
			2007-2009	20	0.4260		
		TSS	2002-2004	20	11.0500	0.098	decreasing
			2007-2009	20	9.1530		
		Flow	2002-2004	20	0.3125	0.001	increasing
			2007-2009	17	0.6665		
OK720500-02-0300F	Clear Creek: Beaver Co.	Total Phosphorus	2002-2004	20	0.0479	0	decreasing
			2007-2009	20	0.0230		
		Ammonia	2002-2004	20	0.0200	0.011	decreasing
			2007-2009	20	0.0113		
		Nitrate	2002-2004	20	0.0795	0.075	decreasing
			2007-2009	20	0.0177		
		TSS	2002-2004	20	12.0500	0	decreasing
			2007-2009	20	7.0710		
OK720500-02-0500G	Palo Duro Creek	DO (percent saturation)	2002-2004	19	88.9400	0.083	decreasing
			2007-2009	22	72.5700		
		Nitrate	2002-2004	20	0.0840	0.085	decreasing
			2007-2009	20	0.0222		
		Available Nitrogen	2002-2004	20	0.1648	0.013	decreasing
			2007-2009	20	0.0474		
OK720500-03-0010C	Wolf Creek: Lower	Ammonia	2002-2004	16	0.0455	0	decreasing
			2007-2009	18	0.0154		
		TSS	2002-2004	16	33.6300	0.069	decreasing
			2007-2009	18	19.9500		
OK720500-03-0010G	Wolf Creek: Upper	Total Phosphorus	2002-2004	20	0.0841	0.002	decreasing
			2007-2009	19	0.0472		
		Ammonia	2002-2004	21	0.0307	0.055	decreasing
			2007-2009	19	0.0106		
		Turbidity	2002-2004	22	25.8900	0.077	decreasing
			2007-2009	20	13.1600		

3.2 BIOLOGICAL MONITORING

3.2.1 Habitat Assessment

Total habitat scores for each site and computed metric scores are listed below (Table 11). Lower Black Bear Creek had the highest habitat scores of all the sites, while Upper Black Bear Creek had the lowest habitat score.

Table 11. Habitat assessment metric values for monitoring sites in the Rotating Basin Group2, Cycle 2.

SiteName	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Beaver Creek: Logan Co.	OK620900-03-0230C	6.7	3.4	13.2	5.3	4.1	16	1.8	6.7	6.2	3.5	3.6	70.2
Beaver Creek: Osage Co.	OK621210-00-0050L	5.3	9.5	13.2	10.4	4.1	4.5	8.7	3.8	6	4.6	10	80.1
Bent Creek	OK720500-01-0070D	1.7	0.4	0	19.9	0	18	0.5	7.3	7	2.2	9.2	66.3
Bitter Creek	OK621100-00-0100G	3.9	0.4	14.6	13.3	0	16	16.5	3	10	2	9.9	89.4
Black Bear Creek: Lower	OK621200-03-0010D	10.9	12.2	13.3	3.4	14.7	20	11.1	6.7	6.3	3.7	3.2	105.5
Black Bear Creek: Middle	OK621200-03-0010M	0.8	4.3	13.4	3.7	4.1	18	7.7	6	3	5.2	7.8	74.1
Black Bear Creek: Upper	OK621200-03-0010W	0.8	2.1	0	4.9	2.2	5.4	0.5	1.1	7.4	6.6	8.7	39.7
Bois d'Arc Creek	OK621000-03-0010C	2.8	1	15.9	8.4	5.9	15	1.4	2.2	4.7	2.5	9.2	69.1
Buffalo Creek: Lower	OK620920-05-0010G	1.9	0.4	14.6	6.2	0	17	2.3	0.8	8.5	7.3	10	69.1
Buffalo Creek: Upper	OK620920-05-0010P	2.7	0.4	0	3.9	0	15	15.1	2.4	9.1	5.2	9.9	64.0
Chickaskia River: Lower	OK621100-00-0010B	0.6	0.9	14.6	0.1	0	20	0.4	0.5	7.6	3.4	5	53.1
Chickaskia River: Upper	OK621100-00-0010M	1	0.4	0	4	0	20	1.4	2.2	7	8.4	10	54.4
Chilocco Creek	OK621210-00-0270C	3.2	1.4	13.4	19.9	0	11	2.8	4.7	8.3	1.2	6.8	72.7
Cimarron River: Beaver Co.	OK620930-00-0010T	1	0.4	0	0.8	0	18	1.8	0.3	10	6.9	10	48.8
Cimarron River: Cimarron Co.	OK720900-00-0180C	13	10.1	18	8.5	0	3	16.5	-0.1	9.8	7.8	4.6	91.2
Clear Creek: Harper Co.	OK720500-02-0070G	10.7	1.4	9.9	18.7	0	15	16.5	2.6	10	8.7	9.6	103.2
Clear Creek: Beaver Co.	OK720500-02-0300F	10.2	2.1	13.4	6.2	0	11	5	0.3	10	8	5	71.3
Cooper Creek	OK620910-02-0040C	0.4	0.9	20.2	9.2	0	17	13.7	2.4	10	2.3	9.6	85.6
Cottonwood Creek	OK620910-04-0010D	0.9	0.4	0	3	0	20	13.7	4	9.9	0.4	10	62.3
Council Creek	OK620900-02-0050H	0.7	4.3	14.6	16.8	0	15	6.7	1.5	7.7	2.4	3	72.8
Crooked Creek: Beaver Co.	OK620930-00-0100G	1.5	0.4	17.2	6.2	0	13	0.4	2	9.4	4.8	4.2	59.4
Crooked Creek: Grant Co.	OK621000-06-0010C	0.5	1.1	13.2	3.8	0	16	1.4	2.4	7.9	4.4	10	60.8
Dead Indian Creek	OK620910-05-0080D	1	1.4	0	19.9	2.2	15	6.7	1.6	7.6	3	9.9	68.7
Deep Creek	OK620910-02-0250C	0.5	1.1	13.2	1.4	0	16	3.5	0.8	10	2.7	9.5	58.4
Deer Creek	OK621000-04-0010D	2.5	1.3	14.3	3.9	5.9	15	6.7	2.6	8.2	5	8.8	73.9
Doga Creek	OK621200-02-0020C	6.6	2.7	20	12.7	0	3.5	16.5	1.5	4.2	2.9	9.5	80.1
Driftwood Creek	OK621010-03-0030C	1	0.7	20.2	5.7	0	16	4.2	1.8	6.4	4.3	5	64.8
Duck Pond Creek	OK720500-02-0250F	13	1	16.5	17	0	0.8	12.3	0.8	9.4	6.3	5	82.1
Dugout Creek	OK620900-03-0080C	0.6	0.7	3.5	15.7	2.2	20	1.4	0	6.3	3.6	9.6	63.6
Eagle Chief Creek: Lower	OK620920-04-0010C	0.5	0.4	20.2	10.4	0	20	0.5	0.5	9.2	3.7	9.2	74.6
Eagle Chief Creek: Upper	OK620920-04-0010G	1.9	0.4	20.2	11.5	0	16	0.4	0.8	6	3.8	4	65.2
Euchee Creek	OK620900-01-0290D	0.4	0.8	13.6	11.6	0	13	8.7	2.4	9.9	0.3	10	70.8
Gray Horse Creek	OK621200-01-0400C	7.5	11.6	15.7	18.1	4.1	1.8	9.9	2	6.5	3.4	6	86.6
Griever Creek	OK620920-01-0130G	0.5	0.4	0	13.8	0	3.8	16.5	2.4	5.6	2.6	9.3	54.9
Indian Creek: Major Co.	OK620910-02-0310C	1.8	1.1	0	8.6	2.2	17	0.5	1.2	9.1	5.8	4	51.5
Indian Creek: Woodward Co.	OK720500-01-0200D	0.8	0.4	0	4.6	0	15	5.8	2.4	6.9	4.3	9.5	49.8
Kingfisher Creek	OK620910-05-0010J	1	2.4	14.6	11.8	4.1	20	12.3	1.6	9.7	0.8	10	88.3
Kiowa Creek: Beaver Co.	OK720500-02-0130M	1.9	2.4	7.7	17.1	0	14	1.4	1.1	8.9	7.5	3.2	64.8

SiteName	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Kiowa Creek: Harper Co.	OK720500-02-0130C	1.4	0.4	0	12.3	0	16	15.1	1.2	7.9	3.4	8.9	66.4
Lagoon Creek	OK620900-01-0180J	3.2	8.2	9.9	8.3	11.4	10	16.5	5.4	7.4	1.3	9.7	91.5
Long Creek	OK620920-02-0080D	3.8	2.5	11.3	8.9	4.1	12	5	4	7.3	6.1	9.3	73.8
Main Creek	OK620920-01-0180F	0.4	0.4	0	9	0	18	7.7	-0.1	10	6.6	9.9	61.6
Medicine Lodge River	OK621010-03-0010D	0.1	0.4	0	4.6	0	20	3.5	0.6	9.1	0.2	9.3	47.8
Otter Creek: Logan Co.	OK620910-03-0040C	3.9	2.3	14.6	0.7	9	15	0.4	0.5	6.7	0.4	10	63.2
Otter Creek: Harper Co.	OK720500-02-0050B	10.1	0.4	0	18.6	0	10	16.5	0.8	10	8.1	3.8	78.6
Palo Duro Creek	OK720500-02-0500G	14.8	4.3	20	19.5	0	3.8	16.5	0.3	10	8.9	4.2	102.3
Persimmon Creek	OK720500-01-0150G	1	0.4	0	18	0	17	2.8	1.9	9.8	3.7	9.9	64.1
Pond Creek	OK621000-05-0010D	1	0.4	14.6	7.4	0	17	8.7	0.5	7.2	4.2	10	70.9
Red Rock Creek: Lower	OK621200-05-0010K	5	4.4	14.7	0.9	7.5	17	16.5	1.1	10	0.2	5	82.7
Red Rock Creek: Upper	OK621200-05-0010M	3.9	1.4	13.2	13	0	16	2.8	3.2	7.1	4.9	9.6	74.9
Salt Creek: Payne Co.	OK620900-02-0020D	3	7.5	14.6	10.2	0	12	13.7	0.5	7	1.2	3.2	72.6
Salt Creek: Kingfisher Co.	OK620910-02-0100D	0.5	0.4	14.6	4.7	0	20	4.5	-0.1	9.9	2.2	9.7	66.4
Salt Creek: Lower	OK621200-04-0010F	9.4	13.8	15.4	8.9	10.3	16	0.4	1.4	4.9	2.1	9.5	92.3
Salt Creek: Upper	OK621200-04-0010P	1.1	1.6	14.6	5.4	0	20	16.5	0.5	8.6	4.7	3.6	76.5
Salt Fork of Arkansas River	OK621010-01-0010D	13.4	0.4	0	1.4	16.3	20	0.5	-0.1	10	6	9.7	77.6
Sand Creek	OK620920-05-0050J	13.9	1.6	0	17.1	2.2	1.5	16.5	-0.1	10	8.6	9.9	81.2
Sandy Creek	OK621010-02-0010D	1.5	0.4	0	10.1	0	20	3.5	-0.1	8.8	4.7	9.2	58.1
Skeleton Creek: Lower	OK620910-03-0010F	4.8	7.2	14	0.9	2.2	17	16.5	2.2	7.9	4.7	3.6	81.1
Skeleton Creek: Upper	OK620910-03-0010S	2.4	0.6	14.6	4.6	2.2	20	12.3	2.4	5.4	3.2	9.3	77.0
Spring Creek	OK720500-02-0100D	9.2	0.4	0	19.8	0	4.4	15.1	1.6	10	7.9	5	73.4
Stillwater Creek: Lower	OK620900-04-0040C	1.3	2.5	14.6	9.6	0	13	5	2.1	6.2	4.3	8.8	67.4
Stillwater Creek: Upper	OK620900-04-0070T	10.8	1.1	14.6	19.3	0	19	3.5	4.7	8.1	3.8	9.3	94.4
Turkey Creek: Woods Co.	OK621010-01-0230G	1.4	3.6	13.5	19.9	2.2	17	6.7	1.6	6.5	3.6	9.5	85.1
Turkey Creek: Lower	OK620910-06-0010B	0.9	1.5	14.6	2.2	0	20	2.3	1.2	10	2.2	5	59.9
Turkey Creek: Upper	OK620910-06-0010T	0.6	0.6	19.3	12.1	5.9	15	5.8	0	10	0.7	10	80.2
Uncle John's Creek	OK620910-05-0030C	2.1	0.4	0	11.6	0	18	0.4	3.2	6.8	3.8	9.5	55.9
West Clay Creek	OK621010-01-0090R	0.8	1.4	14	8.6	0	18	8.7	0.4	8.3	3.8	10	73.7
Wolf Creek: Lower	OK720500-02-0030M	2.3	1.6	13.2	7	0	18	2.3	5.9	8.5	5.9	5	70.1
Wolf Creek: Upper	OK720500-03-0010G	0.9	0.4	0	9.1	0	20	11.1	1	8.8	5.9	9.5	66.7
Yellowstone Creek	OK621010-01-0270C	0.6	0.4	0	7.9	5.9	19	7.7	0	10	7.8	10	68.8

Sites were compared relative to the mean total habitat score of high quality sites in the respective ecoregion and a range determined by +/- two standard deviations (Figure 4). Sites tended to be within the high quality range in all ecoregions. Only one site, Upper Black Bear Creek, was below the high quality site range. Sites with scores that are within +/- two standard deviations of the mean of the high quality sites do not necessarily have "reference" conditions; rather, sites outside of these values have either extremely good or extremely poor conditions which merit further investigation. Low habitat scores could be the result of anthropogenic activities, could be naturally occurring, or could indicate an unrepresentative reach.

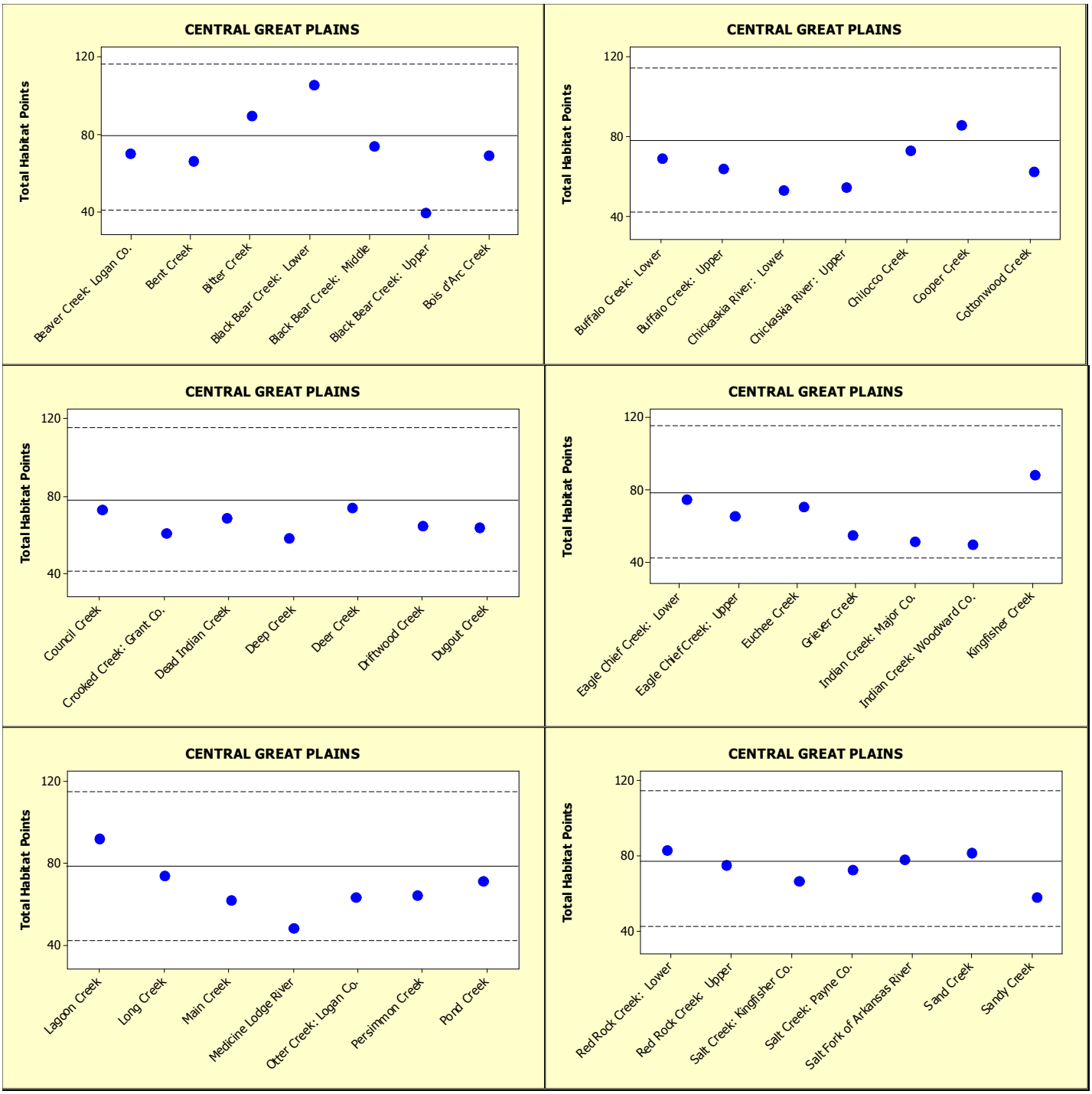


Figure 4. Total habitat score for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

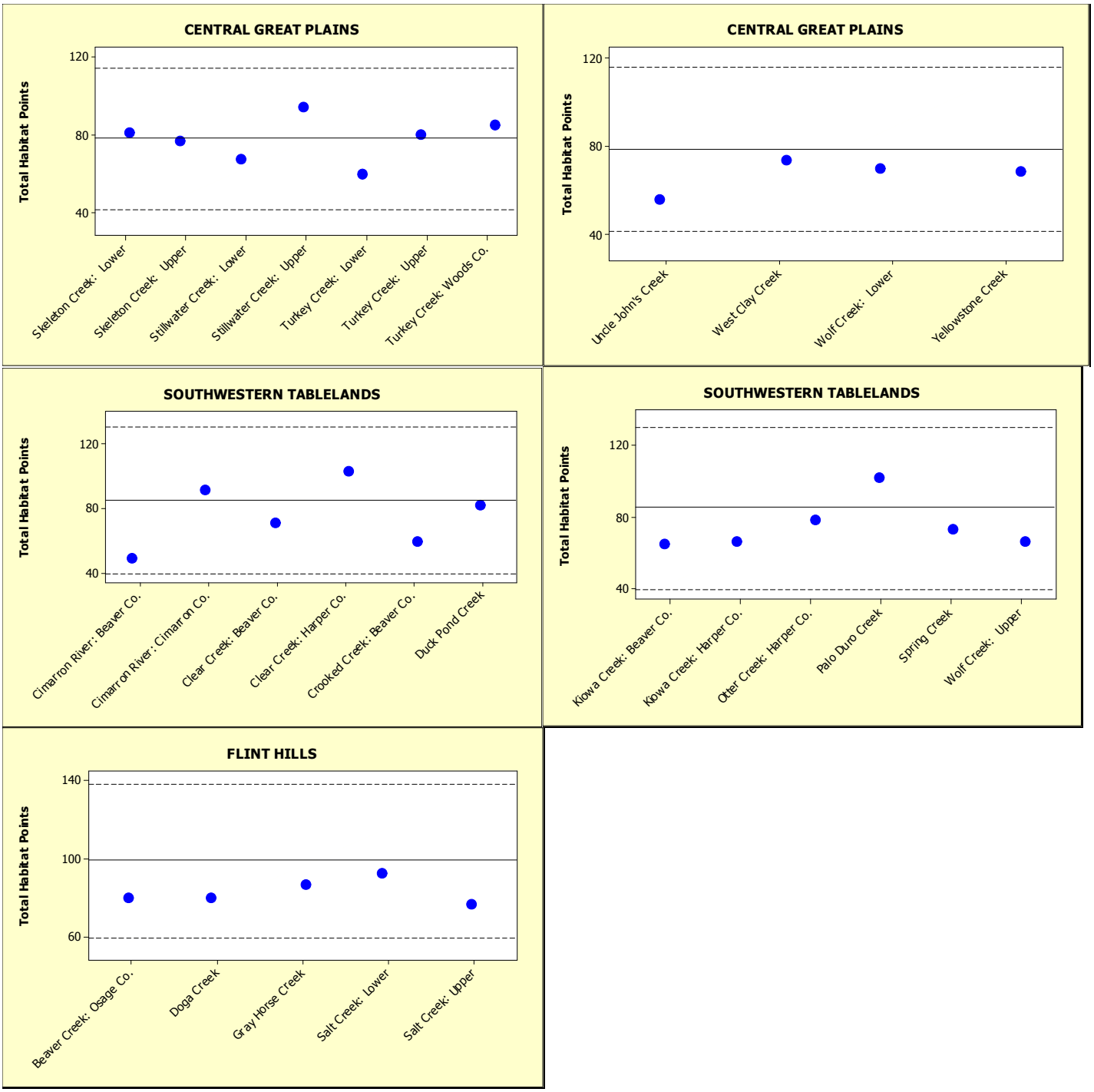


Figure 4, cont. Total habitat score for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

3.2.2 Fish Collections

Fish metrics used to compute IBI scores for the Rotating Basin sites using the OCC method are listed in Table 12. Use of this IBI method allows assessment of streams which lack definite support assignment using the state biocriteria method. For a complete listing of fish collection data, including species and numbers caught, consult Appendix B. All data was compared relative to the same mean of the high quality sites for the respective ecoregion in order to obtain the IBI score (OCC method). Although, ideally, one would use collections from the same years for comparison, multiyear collections at sites deemed "high quality" were not available.

Table 13 presents the results of fish assessment based on the OCC's modified RBP method compared with the fish assessment based on Oklahoma state biocriteria (as described in Oklahoma Water Resource Board, *Implementation of Oklahoma's Water Quality Standards, Subchapter 15: Use Support Assessment Protocols* (USAP), OAC 785:46-15). The state biocriteria are based on older delineations of the level 3 ecoregions, so there were some differences in scoring based on the differences in grouping of sites. The OCC method allowed greater discrimination of the biological condition among sites. A majority of the sites, 40 in all, had fish communities that were "excellent" relative to high quality sites in the ecoregion, 14 sites had fish communities that were "good," 14 sites were "fair," three sites were "poor" relative to high quality sites in the ecoregion, and two sites were "very poor." Upper Stillwater Creek has a Habitat Limited Aquatic Community designation, indicating that irreversible, man-made conditions are constraining the fish and wildlife propagation use.

Table 12. Metric values for calculation of fish IBI scores (OCC method) for Rotating Basin Group 2 Cycle 2 monitoring sites.

SiteName	WBID	Date	Total Number	Total Spp	Darter Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophylic Spawners
Beaver Creek: Logan Co.	OK620900-03-0230C	7/9/2008	247	14	1	1	4	0	92.31%	7.29%	0%
Beaver Creek: Osage Co.	OK621210-00-0050L	7/27/2009	680	29	2	4	7	3	82.79%	3.53%	7.35%
Bent Creek	OK720500-01-0070D	7/26/2007	283	9	0	1	2	2	57.24%	42.76%	0%
Bitter Creek	OK621100-00-0100G	8/5/2008	218	11	0	0	3	0	100%	0.46%	0%
Black Bear Creek: Lower	OK621200-03-0010D	8/28/2008	584	18	0	2	4	2	92.98%	13.87%	0%
Black Bear Creek: Middle	OK621200-03-0010M	9/5/2008	656	15	1	3	3	3	77.74%	16.31%	4.12%
Black Bear Creek: Upper	OK621200-03-0010W	8/5/2009	1640	13	0	2	3	2	99.63%	0.30%	0%
Bois d'Arc Creek	OK621000-03-0010C	9/4/2007	665	27	2	5	6	3	90.83%	7.37%	2.71%
Buffalo Creek: Lower	OK620920-05-0010G	6/13/2007	425	10	0	2	2	1	75.76%	21.88%	2.35%
Buffalo Creek: Upper	OK620920-05-0010P	6/13/2007	1179	12	0	2	2	1	44.61%	53.52%	1.78%
Chickaskia River: Lower	OK621100-00-0010B	8/13/2009	105	16	1	3	0	4	89.52%	8.57%	1.90%
Chickaskia River: Upper	OK621100-00-0010M	8/13/2009	177	16	1	2	1	2	92.09%	2.26%	2.82%
Chilocco Creek	OK621210-00-0270C	8/5/2008	199	18	0	0	7	0	95.48%	0%	4.52%
Cimarron River: Beaver Co.	OK620930-00-0010T	9/7/2007	2031	10	1	1	1	1	46.04%	26.54%	1.33%
Cimarron River: Cimarron Co.	OK720900-00-0180C	7/19/2007	386	8	0	0	3	0	100%	0%	0%
Clear Creek: Beaver Co.	OK720500-02-0300F	9/6/2007	276	9	0	0	4	0	80.07%	0%	0%
Clear Creek: Harper Co.	OK720500-02-0070G	6/28/2007	144	9	0	1	4	1	92.36%	7.64%	0%
Cooper Creek	OK620910-02-0040C	8/8/2007	583	15	0	1	3	1	96.40%	3.95%	0%
Cottonwood Creek	OK620910-04-0010D	7/9/2008	154	14	0	1	4	1	96.75%	3.25%	0%
Council Creek	OK620900-02-0050H	5/18/2007	219	11	0	0	5	0	100%	0%	0%
Crooked Creek: Beaver Co.	OK620930-00-0100G	8/2/2007	2226	19	1	2	5	2	49.96%	20.40%	29.60%

SiteName	WBID	Date	Total Number	Total Spp	Darter Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophylic Spawners
Crooked Creek: Grant Co.	OK621000-06-0010C	8/9/2007	1131	19	0	1	4	1	74.54%	19.45%	0%
Dead Indian Creek	OK620910-05-0080D	6/7/2007	819	13	0	1	5	1	84.74%	15.26%	0%
Deep Creek	OK620910-02-0250C	8/15/2007	451	17	0	1	6	1	96.23%	5.99%	0%
Deer Creek	OK621000-04-0010D	9/18/2007	467	19	2	4	5	3	87.15%	7.07%	0.43%
Doga Creek	OK621200-02-0020C	9/17/2007	441	23	1	1	8	0	74.60%	0.91%	5.90%
Driftwood Creek	OK621010-03-0030C	8/21/2007	519	20	0	2	5	1	81.50%	10.21%	1.16%
Duck Pond Creek	OK720500-02-0250F	9/6/2007	478	9	0	0	5	0	100%	0%	0%
Dugout Creek	OK620900-03-0080C	5/22/2007	683	11	0	1	3	1	97.36%	2.64%	0%
Eagle Chief Creek: Lower	OK620920-04-0010C	8/10/2007	643	12	0	0	4	0	89.42%	11.04%	0%
Eagle Chief Creek: Upper	OK620920-04-0010G	8/10/2007	515	11	0	1	3	1	95.15%	6.02%	0%
Euchee Creek	OK620900-01-0290D	10/4/2007	115	16	0	0	5	0	58.26%	9.57%	0%
Gray Horse Creek	OK621200-01-0400C	8/14/2007	208	23	3	5	7	2	75.96%	2.88%	2.88%
Griever Creek	OK620920-01-0130G	6/12/2007	590	11	0	2	3	1	80.85%	19.83%	0.34%
Indian Creek: Major Co.	OK620910-02-0310C	5/31/2007	919	17	0	2	4	1	61.37%	38.41%	21.76%
Indian Creek: Woodward Co.	OK720500-01-0200D	7/26/2007	485	15	0	1	5	1	86.60%	13.20%	0%
Kingfisher Creek	OK620910-05-0010J	8/8/2007	349	15	0	1	3	1	95.13%	5.16%	0%
Kiowa Creek: Harper Co.	OK720500-02-0130C	9/7/2007	1320	16	0	1	5	1	57.05%	42.95%	0%
Kiowa Creek: Beaver Co.	OK720500-02-0130M	8/1/2007	1143	12	0	1	3	1	74.89%	25.11%	0%
Lagoon Creek	OK620900-01-0180J	5/21/2007	294	15	1	1	8	0	95.92%	0%	1.02%
Long Creek	OK620920-02-0080D	6/12/2007	588	16	0	2	6	1	75.34%	16.84%	7.82%
Main Creek	OK620920-01-0180F	6/12/2007	229	8	0	1	1	1	55.02%	46.29%	0%
Medicine Lodge River	OK621010-03-0010D	8/27/2007	609	18	0	1	4	1	81.77%	12.64%	0%
Otter Creek: Harper Co.	OK720500-02-0050B	6/28/2007	48	9	0	0	4	0	97.92%	2.08%	0%
Otter Creek: Logan Co.	OK620910-03-0040C	8/29/2007	725	15	0	1	3	1	98.07%	16.83%	0%
Palo Duro Creek	OK720500-02-0500G	6/27/2007	49	3	0	0	1	0	100%	0%	0%
Persimmon Creek	OK720500-01-0150G	7/27/2007	852	17	0	1	4	1	80.28%	19.72%	0%
Pond Creek	OK621000-05-0010D	8/9/2007	367	18	0	1	5	1	84.47%	13.62%	0%
Red Rock Creek: Lower	OK621200-05-0010K	8/6/2008	152	18	1	3	6	3	92.76%	3.95%	1.97%
Red Rock Creek: Upper	OK621200-05-0010M	8/6/2008	309	15	1	2	5	2	85.44%	11.65%	3.56%
Salt Creek: Lower	OK621200-04-0010F	9/19/2007	526	24	3	5	6	2	56.46%	4.94%	14.45%
Salt Creek: Upper	OK621200-04-0010P	6/6/2007	123	20	1	1	7	0	80.49%	0.81%	17.07%
Salt Creek: Kingfisher Co.	OK620910-02-0100D	8/15/2007	337	11	0	1	3	1	62.91%	40.06%	0%
Salt Creek: Payne Co.	OK620900-02-0020D	5/21/2007	64	13	0	0	6	0	81.25%	1.56%	0%
Salt Fork of Arkansas River	OK621010-01-0010D	8/20/2007	1636	22	0	0	6	0	92.67%	8.13%	0%
Sand Creek	OK620920-05-0050J	6/13/2007	205	10	0	0	5	0	99.51%	0.49%	0%
Sandy Creek	OK621010-02-0010D	8/21/2007	624	15	0	1	3	1	90.54%	9.78%	0%
Skeleton Creek: Lower	OK620910-03-0010F	8/7/2009	244	15	0	0	2	0	95.90%	9.43%	0%
Skeleton Creek: Upper	OK620910-03-0010S	8/14/2007	120	11	0	1	3	1	95.83%	20.00%	0%
Spring Creek	OK720500-02-0100D	7/12/2007	839	5	0	0	1	0	100%	0%	0%
Stillwater Creek: Lower	OK620900-04-0040C	9/4/2008	483	22	0	1	5	2	94.62%	28.16%	0%
Stillwater Creek: Upper	OK620900-04-0070T	7/10/2008	76	10	0	0	4	0	98.68%	0%	0%
Turkey Creek: Lower	OK620910-06-0010B	10/11/2007	906	21	0	1	3	2	98.34%	3.42%	0%
Turkey Creek: Upper	OK620910-06-0010T	8/24/2007	413	12	0	1	2	1	89.83%	10.17%	0%
Turkey Creek: Woods Co.	OK621010-01-0230G	7/17/2007	132	11	0	2	3	1	73.48%	25.76%	0.76%
Uncle John's Creek	OK620910-05-0030C	8/16/2007	283	11	0	1	5	1	95.41%	4.59%	0%
West Clay Creek	OK621010-01-0090R	7/16/2007	442	14	0	0	4	0	77.38%	18.78%	0%

SiteName	WBID	Date	Total Number	Total Spp	Darter Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophylic Spawners
Wolf Creek: Lower	OK720500-02-0030M	9/5/2007	589	22	1	2	5	1	97.45%	0.68%	0%
Wolf Creek: Upper	OK720500-03-0010G	9/5/2007	451	14	0	1	5	2	93.57%	3.99%	0.22%
Yellowstone Creek	OK621010-01-0270C	7/17/2007	417	11	0	1	4	1	68.35%	31.65%	0%

Table 13. IBI scores based on Use Support Assessment Protocol biocriteria (OWRB 2008) and OCC's modified RBP method. WWAC=warm water aquatic community, HLAC=habitat limited aquatic community. S=supporting, NS=not supporting, U=undetermined, *=no criteria for that ecoregion.**

SiteName	WBID	FWProp	IBI Total Score (USAP)	FWPropSupport (USAP)	IBI Total Score (OCC)	Percent of Reference	Score Interpretation (OCC)
Beaver Creek: Logan Co.	OK620900-03-0230C	WWAC	27	FS	17	0.77	fair
Beaver Creek: Osage Co.	OK621210-00-0050L	WWAC	33	***	21	0.78	fair
Bent Creek	OK720500-01-0070D	WWAC	19	U	19	0.86	good
Bitter Creek	OK621100-00-0100G	WWAC	21	U	15	0.68	fair
Black Bear Creek: Lower	OK621200-03-0010D	WWAC	27	FS	23	1.04	excellent
Black Bear Creek: Middle	OK621200-03-0010M	WWAC	29	FS	23	1.04	excellent
Black Bear Creek: Upper	OK621200-03-0010W	WWAC	21	U	23	1.04	excellent
Bois d'Arc Creek	OK621000-03-0010C	WWAC	33	FS	23	1.04	excellent
Buffalo Creek: Lower	OK620920-05-0010G	WWAC	19	U	23	1.04	excellent
Buffalo Creek: Upper	OK620920-05-0010P	WWAC	21	U	25	1.13	excellent
Chickaskia River: Lower	OK621100-00-0010B	WWAC	25	FS	19	0.86	good
Chickaskia River: Upper	OK621100-00-0010M	WWAC	21	U	19	0.86	good
Chilocco Creek	OK621210-00-0270C	WWAC	27	FS	15	0.68	fair
Cimarron River: Beaver Co.	OK620930-00-0010T	WWAC	21	***	21	0.88	good
Cimarron River: Cimarron Co.	OK720900-00-0180C	WWAC	21	***	15	0.63	fair
Clear Creek: Beaver Co.	OK720500-02-0300F	WWAC	25	***	15	0.63	fair
Clear Creek: Harper Co.	OK720500-02-0070G	WWAC	23	***	23	0.96	excellent
Cooper Creek	OK620910-02-0040C	WWAC	25	FS	21	0.95	excellent
Cottonwood Creek	OK620910-04-0010D	WWAC	21	U	21	0.95	excellent
Council Creek	OK620900-02-0050H	WWAC	27	FS	15	0.68	fair
Crooked Creek: Beaver Co.	OK620930-00-0100G	WWAC	35	***	27	1.13	excellent
Crooked Creek: Grant Co.	OK621000-06-0010C	WWAC	29	FS	21	0.95	excellent
Dead Indian Creek	OK620910-05-0080D	WWAC	23	FS	21	0.95	excellent
Deep Creek	OK620910-02-0250C	WWAC	29	FS	21	0.95	excellent
Deer Creek	OK621000-04-0010D	WWAC	29	FS	23	1.04	excellent
Doga Creek	OK621200-02-0020C	WWAC	31	***	15	0.56	poor
Driftwood Creek	OK621010-03-0030C	WWAC	27	FS	23	1.04	excellent
Duck Pond Creek	OK720500-02-0250F	WWAC	21	***	15	0.63	fair
Dugout Creek	OK620900-03-0080C	WWAC	21	U	21	0.95	excellent
Eagle Chief Creek: Lower	OK620920-04-0010C	WWAC	27	FS	15	0.68	fair

SiteName	WBID	FWProp	IBI Total Score (USAP)	FWPropSupport (USAP)	IBI Total Score (OCC)	Percent of Reference	Score Interpretation (OCC)
Eagle Chief Creek: Upper	OK620920-04-0010G	WWAC	21	U	21	0.95	excellent
Euchee Creek	OK620900-01-0290D	WWAC	25	U	15	0.68	fair
Gray Horse Creek	OK621200-01-0400C	WWAC	31	FS	23	0.85	good
Griever Creek	OK620920-01-0130G	WWAC	21	U	23	1.04	excellent
Indian Creek: Major Co.	OK620910-02-0310C	WWAC	31	FS	27	1.22	excellent
Indian Creek: Woodward Co.	OK720500-01-0200D	WWAC	27	FS	21	0.95	excellent
Kingfisher Creek	OK620910-05-0010J	WWAC	25	FS	21	0.95	excellent
Kiowa Creek: Harper Co.	OK720500-02-0130C	WWAC	27	***	25	1.04	excellent
Kiowa Creek: Beaver Co.	OK720500-02-0130M	WWAC	25	***	25	1.04	excellent
Lagoon Creek	OK620900-01-0180J	WWAC	27	FS	17	0.77	fair
Long Creek	OK620920-02-0080D	WWAC	27	FS	23	1.04	excellent
Main Creek	OK620920-01-0180F	WWAC	17	NS	19	0.86	good
Medicine Lodge River	OK621010-03-0010D	WWAC	29	FS	21	0.95	excellent
Otter Creek: Harper Co.	OK720500-02-0050B	WWAC	21	***	15	0.68	fair
Otter Creek: Logan Co.	OK620910-03-0040C	WWAC	23	FS	21	0.95	excellent
Palo Duro Creek	OK720500-02-0500G	WWAC	13	***	7	0.29	very poor
Persimmon Creek	OK720500-01-0150G	WWAC	27	FS	21	0.95	excellent
Pond Creek	OK621000-05-0010D	WWAC	27	FS	21	0.95	excellent
Red Rock Creek: Lower	OK621200-05-0010K	WWAC	29	FS	23	1.04	excellent
Red Rock Creek: Upper	OK621200-05-0010M	WWAC	31	FS	23	1.04	excellent
Salt Creek: Lower	OK621200-04-0010F	WWAC	31	***	23	0.85	good
Salt Creek: Upper	OK621200-04-0010P	WWAC	31	***	15	0.56	poor
Salt Creek: Kingfisher Co.	OK620910-02-0100D	WWAC	23	FS	23	1.04	excellent
Salt Creek: Payne Co.	OK620900-02-0020D	WWAC	25	U	15	0.68	fair
Salt Fork of Arkansas River	OK621010-01-0010D	WWAC	27	FS	15	0.68	fair
Sand Creek	OK620920-05-0050J	WWAC	25	FS	15	0.68	fair
Sandy Creek	OK621010-02-0010D	WWAC	25	FS	21	0.95	excellent
Skeleton Creek: Lower	OK620910-03-0010F	WWAC	27	FS	13	0.59	poor
Skeleton Creek: Upper	OK620910-03-0010S	WWAC	23	FS	21	0.95	excellent
Spring Creek	OK720500-02-0100D	WWAC	17	***	9	0.38	very poor
Stillwater Creek: Lower	OK620900-04-0040C	WWAC	29	FS	23	1.04	excellent
Stillwater Creek: Upper	OK620900-04-0070T	HLAC	19	U	15	0.68	fair
Turkey Creek: Lower	OK620910-06-0010B	WWAC	25	FS	21	0.95	excellent
Turkey Creek: Upper	OK620910-06-0010T	WWAC	23	FS	19	0.86	good
Turkey Creek: Woods Co.	OK621010-01-0230G	WWAC	23	FS	25	1.13	excellent
Uncle John's Creek	OK620910-05-0030C	WWAC	25	FS	21	0.95	excellent
West Clay Creek	OK621010-01-0090R	WWAC	29	FS	15	0.68	fair
Wolf Creek: Lower	OK720500-02-0030M	WWAC	29	FS	23	1.04	excellent
Wolf Creek: Upper	OK720500-03-0010G	WWAC	29	FS	23	0.96	excellent
Yellowstone Creek	OK621010-01-0270C	WWAC	23	FS	23	1.04	excellent

Figure 5 shows the IBI score for each site (indicated by a blue dot) relative to the mean value for the high quality sites in that ecoregion (indicated by a solid line). The dashed lines in each graph represent +/- two standard deviations of the mean IBI score of the high quality sites in that ecoregion. The FH ecoregion only had one high quality site, so no range is given for this ecoregion.

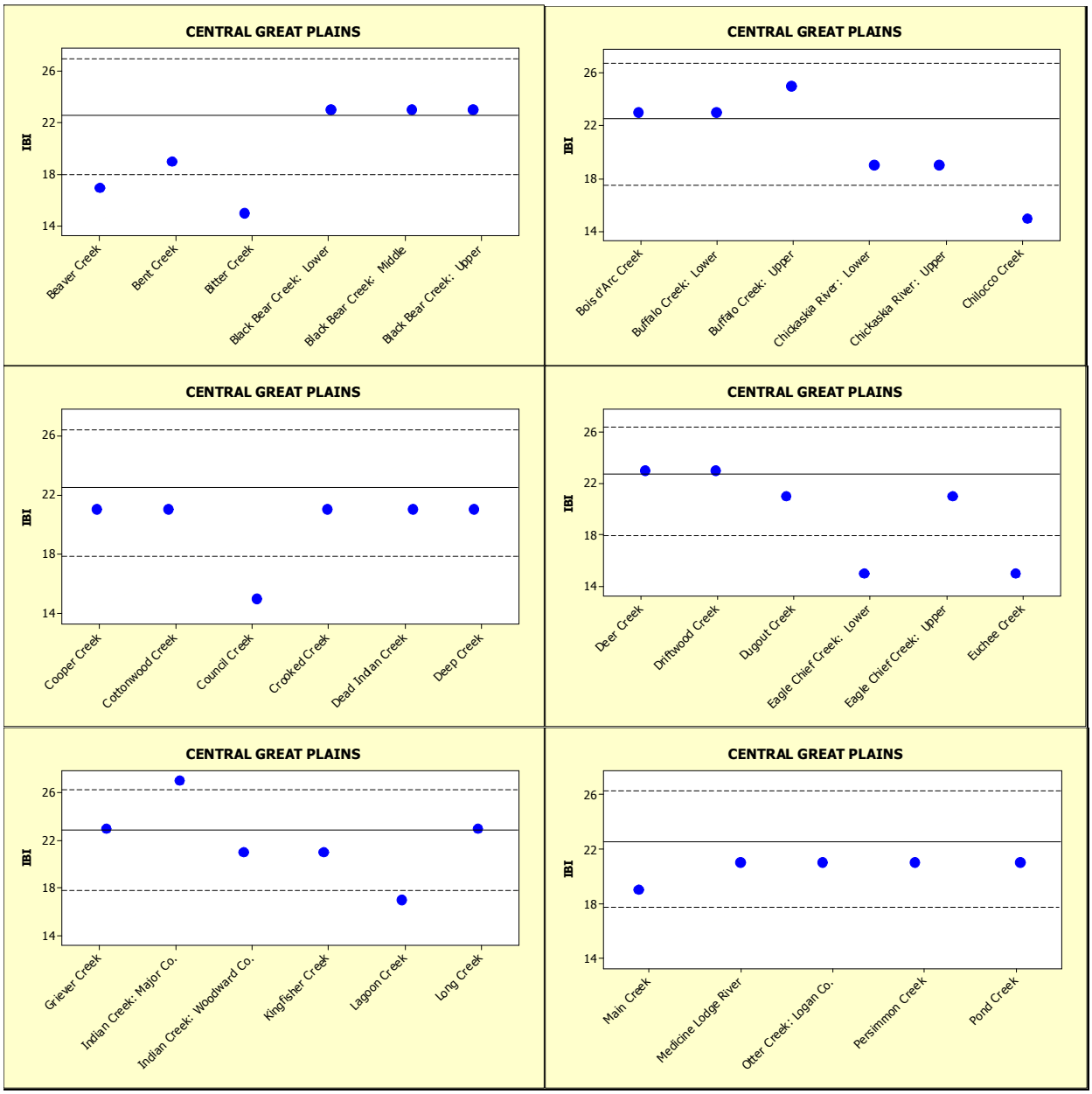


Figure 5. IBI score (fish) for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

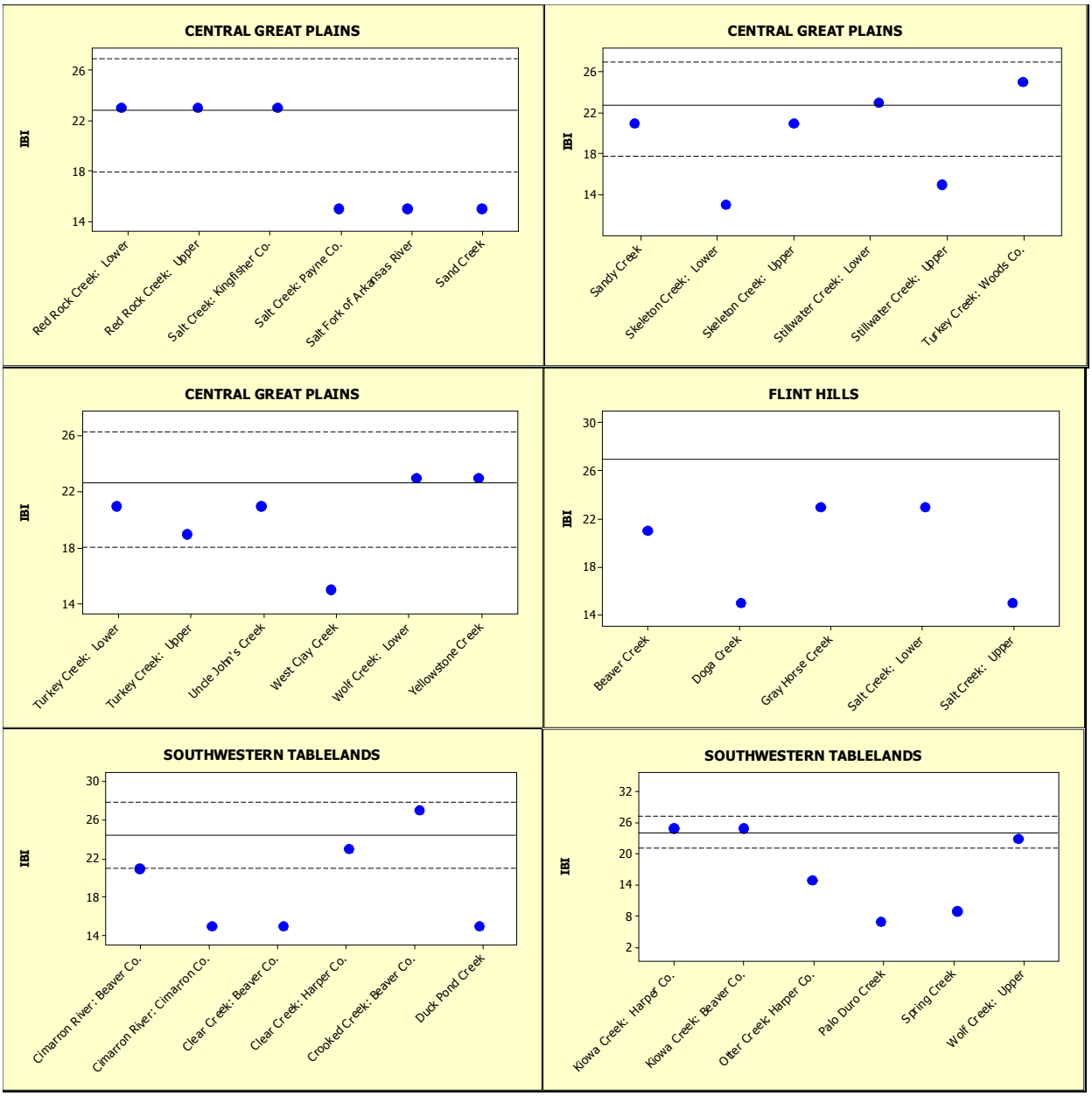


Figure 5, cont. IBI score (fish) for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

The Southwestern Tablelands ecoregion had the lowest scoring sites for fish communities (Figure 5). Sites with IBI scores significantly different from the high quality sites, as indicated by an IBI score below the bottom dashed line in Figure 5, correlated to "fair," "poor," or "very poor" designations in Table 13. The panhandle region of the state, in which the SWT ecoregion is located, experienced dry conditions during this monitoring cycle, so it is possible that drought conditions contributed to these low fish scores.

Table 14 shows a comparison between fish data collected in cycle 1 (2002, 2003, or 2004) and cycle 2 (2007, 2008, or 2009) of the rotating basin project in order to examine whether biological conditions have improved, worsened, or remained the same at a particular site. IBI scores were

calculated relative to the same high quality sites data for both cycles, so any change in condition is due only to a change in the rotating basin cycle 2 collection, not to a change in the high quality sites. The fish community remained in the same condition for 32 of the 70 sites compared. Seventeen streams had worse fish community conditions in cycle 2 relative to cycle 1, while 21 streams had improved fish communities.

Table 14. Comparison of fish data from Cycle 1 (2002-2004) to Cycle 2 (2007-2009) .

SiteName	WBID	Year	Total Score	IBI	Condition
Beaver Creek: Logan Co.	OK620900-03-0230C	2002	28	0.78	good
Beaver Creek: Logan Co.	OK620900-03-0230C	2008	17	0.77	good
Beaver Creek: Osage Co.	OK621210-00-0050L	2003	24	0.63	fair
Beaver Creek: Osage Co.	OK621210-00-0050L	2009	21	0.78	good
Bent Creek	OK720500-01-0070D	2002	19	0.86	good
Bent Creek	OK720500-01-0070D	2007	19	0.86	good
Bitter Creek	OK621100-00-0100G	2002	19	0.86	good
Bitter Creek	OK621100-00-0100G	2008	15	0.68	fair
Black Bear Creek: Lower	OK621200-03-0010D	2003	21	0.95	excellent
Black Bear Creek: Lower	OK621200-03-0010D	2008	23	1.04	excellent
Black Bear Creek: Middle	OK621200-03-0010M	2003	19	0.86	good
Black Bear Creek: Middle	OK621200-03-0010M	2008	23	1.04	excellent
Black Bear Creek: Upper	OK621200-03-0010W	2003	21	0.95	excellent
Black Bear Creek: Upper	OK621200-03-0010W	2009	23	1.04	excellent
Bois d'Arc Creek	OK621000-03-0010C	2004	15	0.68	fair
Bois d'Arc Creek	OK621000-03-0010C	2007	23	1.04	excellent
Buffalo Creek: Lower	OK620920-05-0010G	2002	27	1.22	excellent
Buffalo Creek: Lower	OK620920-05-0010G	2007	23	1.04	excellent
Buffalo Creek: Upper	OK620920-05-0010P	2002	21	0.95	excellent
Buffalo Creek: Upper	OK620920-05-0010P	2007	25	1.13	excellent
Chickaskia River: Lower	OK621100-00-0010B	2004	21	0.95	excellent
Chickaskia River: Lower	OK621100-00-0010B	2009	19	0.86	good
Chickaskia River: Upper	OK621100-00-0010M	2003	23	1.04	excellent
Chickaskia River: Upper	OK621100-00-0010M	2009	19	0.86	good
Chilocco Creek	OK621210-00-0270C	2003	19	0.86	good
Chilocco Creek	OK621210-00-0270C	2008	15	0.68	fair
Cimarron River: Beaver Co.	OK620930-00-0010T	2002	21	0.88	excellent
Cimarron River: Beaver Co.	OK620930-00-0010T	2007	21	0.88	excellent
Cimarron River: Cimarron Co.	OK720900-00-0180C	2002	11	0.46	poor
Cimarron River: Cimarron Co.	OK720900-00-0180C	2007	15	0.63	fair
Clear Creek: Beaver Co.	OK720500-02-0300F	2002	19	0.79	good
Clear Creek: Beaver Co.	OK720500-02-0300F	2007	15	0.63	fair
Clear Creek: Harper Co.	OK720500-02-0070G	2002	23	0.96	excellent
Clear Creek: Harper Co.	OK720500-02-0070G	2007	23	0.96	excellent
Cooper Creek	OK620910-02-0040C	2002	19	0.86	good
Cooper Creek	OK620910-02-0040C	2007	21	0.95	excellent
Cottonwood Creek	OK620910-04-0010D	2002	15	0.68	fair
Cottonwood Creek	OK620910-04-0010D	2008	21	0.95	excellent
Council Creek	OK620900-02-0050H	2002	21	0.95	excellent
Council Creek	OK620900-02-0050H	2007	15	0.68	fair

SiteName	WBID	Year	Total Score	IBI	Condition
Crooked Creek: Beaver Co.	OK620930-00-0100G	2002	15	0.63	fair
Crooked Creek: Beaver Co.	OK620930-00-0100G	2007	27	1.13	excellent
Crooked Creek: Grant Co.	OK621000-06-0010C	2002	21	0.95	excellent
Crooked Creek: Grant Co.	OK621000-06-0010C	2007	21	0.95	excellent
Dead Indian Creek	OK620910-05-0080D	2002	21	0.95	excellent
Dead Indian Creek	OK620910-05-0080D	2007	21	0.95	excellent
Deep Creek	OK620910-02-0250C	2002	25	1.13	excellent
Deep Creek	OK620910-02-0250C	2007	21	0.95	excellent
Deer Creek	OK621000-04-0010D	2002	21	0.95	excellent
Deer Creek	OK621000-04-0010D	2007	23	1.04	excellent
Doga Creek	OK621200-02-0020C	2002	19	0.70	fair
Doga Creek	OK621200-02-0020C	2007	15	0.56	poor
Driftwood Creek	OK621010-03-0030C	2002	23	1.04	excellent
Driftwood Creek	OK621010-03-0030C	2007	23	1.04	excellent
Duck Pond Creek	OK720500-02-0250F	2002	13	0.54	poor
Duck Pond Creek	OK720500-02-0250F	2007	15	0.63	fair
Dugout Creek	OK620900-03-0080C	2002	23	1.04	excellent
Dugout Creek	OK620900-03-0080C	2007	21	0.95	excellent
Eagle Chief Creek: Lower	OK620920-04-0010C	2002	19	0.86	good
Eagle Chief Creek: Lower	OK620920-04-0010C	2007	15	0.68	fair
Eagle Chief Creek: Upper	OK620920-04-0010G	2002	25	1.13	excellent
Eagle Chief Creek: Upper	OK620920-04-0010G	2007	21	0.95	excellent
Euchee Creek	OK620900-01-0290D	2002	21	0.95	excellent
Euchee Creek	OK620900-01-0290D	2007	15	0.68	fair
Gray Horse Creek	OK621200-01-0400C	2002	21	0.78	good
Gray Horse Creek	OK621200-01-0400C	2007	23	0.85	good
Griever Creek	OK620920-01-0130G	2002	21	0.95	excellent
Griever Creek	OK620920-01-0130G	2007	23	1.04	excellent
Indian Creek: Major Co.	OK620910-02-0310C	2002	19	0.86	good
Indian Creek: Major Co.	OK620910-02-0310C	2007	27	1.22	excellent
Indian Creek: Woodward Co.	OK720500-01-0200D	2002	19	0.86	good
Indian Creek: Woodward Co.	OK720500-01-0200D	2007	21	0.95	excellent
Kingfisher Creek	OK620910-05-0010J	2002	21	0.95	excellent
Kingfisher Creek	OK620910-05-0010J	2007	21	0.95	excellent
Kiowa Creek: Harper Co.	OK720500-02-0130C	2002	19	0.79	good
Kiowa Creek: Harper Co.	OK720500-02-0130C	2007	25	1.04	excellent
Kiowa Creek: Beaver Co.	OK720500-02-0130M	2002	25	1.04	excellent
Kiowa Creek: Beaver Co.	OK720500-02-0130M	2007	25	1.04	excellent
Lagoon Creek	OK620900-01-0180J	2002	21	0.95	excellent
Lagoon Creek	OK620900-01-0180J	2007	17	0.77	good
Long Creek	OK620920-02-0080D	2002	23	1.04	excellent
Long Creek	OK620920-02-0080D	2007	23	1.04	excellent
Main Creek	OK620920-01-0180F	2002	19	0.86	good
Main Creek	OK620920-01-0180F	2007	19	0.86	good
Medicine Lodge River	OK621010-03-0010D	2002	17	0.77	good
Medicine Lodge River	OK621010-03-0010D	2007	21	0.95	excellent
Otter Creek: Harper Co.	OK720500-02-0050B	2002	15	0.68	fair

SiteName	WBID	Year	Total Score	IBI	Condition
Otter Creek: Harper Co.	OK720500-02-0050B	2007	15	0.68	fair
Otter Creek: Logan Co.	OK620910-03-0040C	2002	21	0.95	excellent
Otter Creek: Logan Co.	OK620910-03-0040C	2007	21	0.95	excellent
Palo Duro Creek	OK720500-02-0500G	2002	11	0.46	poor
Palo Duro Creek	OK720500-02-0500G	2007	7	0.29	very poor
Persimmon Creek	OK720500-01-0150G	2002	23	1.04	excellent
Persimmon Creek	OK720500-01-0150G	2007	21	0.95	excellent
Pond Creek	OK621000-05-0010D	2002	17	0.77	good
Pond Creek	OK621000-05-0010D	2007	21	0.95	excellent
Red Rock Creek: Lower	OK621200-05-0010K	2003	23	1.04	excellent
Red Rock Creek: Lower	OK621200-05-0010K	2008	23	1.04	excellent
Red Rock Creek: Upper	OK621200-05-0010M	2003	21	0.86	good
Red Rock Creek: Upper	OK621200-05-0010M	2008	23	1.04	excellent
Salt Creek: Lower	OK621200-04-0010F	2003	21	0.78	good
Salt Creek: Lower	OK621200-04-0010F	2007	23	0.85	good
Salt Creek: Upper	OK621200-04-0010P	2002	21	0.78	good
Salt Creek: Upper	OK621200-04-0010P	2007	15	0.56	poor
Salt Creek: Kingfisher Co.	OK620910-02-0100D	2002	15	0.68	fair
Salt Creek: Kingfisher Co.	OK620910-02-0100D	2007	23	1.04	excellent
Salt Creek: Payne Co.	OK620900-02-0020D	2002	19	0.86	good
Salt Creek: Payne Co.	OK620900-02-0020D	2007	15	0.68	fair
Salt Fork of Arkansas River	OK621010-01-0010D	2002	9	0.41	very poor
Salt Fork of Arkansas River	OK621010-01-0010D	2007	15	0.68	fair
Sand Creek	OK620920-05-0050J	2002	15	0.68	fair
Sand Creek	OK620920-05-0050J	2007	15	0.68	fair
Sandy Creek	OK621010-02-0010D	2002	11	0.50	poor
Sandy Creek	OK621010-02-0010D	2007	21	0.95	excellent
Skeleton Creek: Lower	OK620910-03-0010F	2003	21	0.95	excellent
Skeleton Creek: Lower	OK620910-03-0010F	2009	13	0.59	poor
Skeleton Creek: Upper	OK620910-03-0010S	2002	21	0.95	excellent
Skeleton Creek: Upper	OK620910-03-0010S	2007	21	0.95	excellent
Spring Creek	OK720500-02-0100D	2002	9	0.38	very poor
Spring Creek	OK720500-02-0100D	2007	9	0.38	very poor
Stillwater Creek: Lower	OK620900-04-0040C	2003	19	0.86	good
Stillwater Creek: Lower	OK620900-04-0040C	2008	23	1.04	excellent
Stillwater Creek: Upper	OK620900-04-0070T	2002	19	0.86	good
Stillwater Creek: Upper	OK620900-04-0070T	2008	15	0.68	fair
Turkey Creek: Lower	OK620910-06-0010B	2002	17	0.77	good
Turkey Creek: Lower	OK620910-06-0010B	2007	21	0.95	excellent
Turkey Creek: Upper	OK620910-06-0010T	2002	21	0.95	excellent
Turkey Creek: Upper	OK620910-06-0010T	2007	19	0.86	good
Turkey Creek: Woods Co.	OK621010-01-0230G	2002	21	0.95	excellent
Turkey Creek: Woods Co.	OK621010-01-0230G	2007	25	1.13	excellent
Uncle John's Creek	OK620910-05-0030C	2002	30	0.83	good
Uncle John's Creek	OK620910-05-0030C	2007	21	0.95	excellent
West Clay Creek	OK621010-01-0090R	2002	11	0.50	poor
West Clay Creek	OK621010-01-0090R	2007	15	0.68	fair

SiteName	WBID	Year	Total Score	IBI	Condition
Wolf Creek: Lower	OK720500-02-0030M	2002	21	0.95	excellent
Wolf Creek: Lower	OK720500-02-0030M	2007	23	1.04	excellent
Wolf Creek: Upper	OK720500-03-0010G	2002	23	0.96	excellent
Wolf Creek: Upper	OK720500-03-0010G	2007	23	0.96	excellent
Yellowstone Creek	OK621010-01-0270C	2002	23	1.04	excellent
Yellowstone Creek	OK621010-01-0270C	2007	23	1.04	excellent

3.2.3 Macroinvertebrate Collections

The complete macroinvertebrate dataset, including species and numbers captured per site, can be found in Appendix C. Macroinvertebrates were collected for most sites at least once during the project period. Three sites had no macroinvertebrate collections due to inadequate flow conditions during the sample index periods: Euchee Creek, Doga Creek, and Cimarron River in Cimarron County. Lack of flow during the collection periods prevented collection of all planned samples over the cycle at many other sites as well; only 10 sites had four collections over the two-year project period. Seven sites had only a single bug collection during the project period (see Appendix C for details).

Table 15 presents the mean values, by season and sample type, for each metric at each site for the two-year cycle 2 monitoring period. Riffle samples were collected at most sites and, generally, best reflect the macroinvertebrate community as a single habitat (Plafkin et al. 1989). Table 16 contains the overall bioassessment scores determined for each monitoring site averaged over sample types and seasons.

Table 15. Macroinvertebrate metric values determined for each monitoring site, averaged per season and habitat. NI=non-impaired, SI=slightly impaired, MI=moderately impaired, SVI=severely impaired. An asterisk (*) indicates no reference data for computation of IBI score or condition.

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
Beaver Creek: Logan Co.	OK620900-03-0230C	riffle	S	15	7	0.65	2.24	4.50	0.45	26	0.93	NI
Beaver Creek: Osage Co.	OK621210-00-0050L	riffle	W	9	2	0.02	0.73	6.10	0.90	8	0.31	MI
Bent Creek	OK720500-01-0070D	woody	S	13	5.5	0.45	1.88	6.00	0.60	24	0.86	NI
		woody	W	17	6	0.10	1.08	5.85	0.82	20	0.91	NI
Bitter Creek	OK621100-00-0100G	woody	S	14	6	0.35	1.93	5.68	0.54	26	0.93	NI
		woody	W	6	1	0.04	0.80	6.02	0.88	8	0.36	MI
Black Bear Creek: Lower	OK621200-03-0010D	riffle	S	18	11	0.44	2.19	5.70	0.49	24	0.86	NI
		riffle	W	19	7	0.28	1.94	5.41	0.63	24	1.00	NI
		woody	S	11	3	0.29	1.60	6.37	0.68	16	0.57	SI
		woody	W	19	9	0.30	2.10	5.85	0.52	26	1.18	NI
Black Bear Creek: Middle	OK621200-03-0010M	riffle	S	14	8	0.50	2.07	5.63	0.54	24	0.86	NI
		riffle	W	13	4	0.49	2.11	5.32	0.47	26	1.08	NI

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
		woody	W	3	1	0.54	0.90	4.92	0.92	12	0.55	SI
Black Bear Creek: Upper	OK621200-03-0010W	riffle	S	17	9	0.38	2.26	5.48	0.43	24	0.86	NI
		riffle	W	9	1	0.01	1.81	5.47	0.50	12	0.50	MI
		woody	S	10	7	0.59	1.66	5.57	0.60	24	0.86	NI
		woody	W	11	5	0.56	1.60	5.05	0.69	26	1.18	NI
Bois d'Arc Creek	OK621000-03-0010C	riffle	S	18	7.5	0.57	1.84	5.46	0.67	26	0.93	NI
		riffle	W	8.5	1.5	0.06	1.19	6.07	0.77	10	0.42	MI
		woody	S	22	13	0.47	2.20	5.87	0.51	26	0.93	NI
		woody	W	6	0	0.00	0.98	6.32	0.84	8	0.36	MI
Buffalo Creek: Lower	OK620920-05-0010G	riffle	S	13	4	0.12	2.11	4.73	0.55	16	0.57	SI
		veg	S	9.5	3.5	0.39	1.75	4.27	0.58	16	0.57	SI
		veg	W	10	3	0.53	1.62	5.06	0.66	22	1.00	NI
		woody	S	15	4	0.68	1.57	4.70	0.73	20	0.71	SI
		woody	W	11	4	0.13	1.22	5.79	0.77	16	0.73	SI
Buffalo Creek: Upper	OK620920-05-0010P	riffle	S	11	2.5	0.54	1.69	5.15	0.62	18	0.64	SI
		veg	S	14	4	0.27	1.69	6.38	0.60	20	0.71	SI
		veg	W	16	4	0.37	2.29	6.03	0.42	26	1.18	NI
		woody	S	18	5	0.32	2.35	5.68	0.41	22	0.79	SI
Chickaskia River: Lower	OK621100-00-0010B	riffle	W	9	3	0.06	0.61	5.87	0.90	12	0.50	MI
Chickaskia River: Upper	OK621100-00-0010M	riffle	W	7	3	0.33	1.69	4.39	0.56	18	0.75	SI
Chilocco Creek	OK621210-00-0270C	riffle	W	16	10	0.71	2.16	5.30	0.52	26	1.08	NI
		woody	S	13	6	0.37	1.74	6.25	0.65	26	0.93	NI
		woody	W	10	2	0.02	1.49	6.55	0.72	10	0.45	MI
Cimarron River: Beaver Co.	OK620930-00-0010T	veg	S	11	4.5	0.25	1.17	6.99	0.75	16	0.57	SI
		veg	W	10	2	0.03	1.01	6.05	0.87	10	0.42	MI
Clear Creek: Harper Co.	OK720500-02-0070G	veg	S	13	5	0.21	1.94	6.09	0.56	22	0.79	SI
		veg	W	19	9	0.51	2.67	4.51	0.28	32	1.33	NI
Clear Creek: Beaver Co.	OK720500-02-0300F	veg	W	3	0	0.00	0.31	8.04	0.96	4	0.17	SVI
Cooper Creek	OK620910-02-0040C	riffle	W	8	3	0.02	0.70	6.03	0.94	10	0.42	MI
		veg	W	9	0	0.00	0.88	6.14	0.86	10	0.45	MI
		woody	S	9.5	4	0.23	1.24	6.87	0.80	12	0.43	MI
Cottonwood Creek	OK620910-04-0010D	veg	S	11	6	0.85	1.69	4.99	0.60	24	0.86	NI
		woody	S	13	7.5	0.58	1.89	5.34	0.60	26	0.93	NI
		woody	W	10	5	0.38	2.10	5.84	0.44	24	1.09	NI
Council Creek	OK620900-02-0050H	riffle	S	10	5	0.75	1.25	4.67	0.80	20	0.71	SI
		riffle	W	18	7.5	0.56	1.99	4.93	0.58	26	1.08	NI
		woody	S	10	4	0.13	1.53	6.46	0.70	14	0.50	MI
		woody	W	14	6	0.34	1.89	5.88	0.62	26	1.18	NI
Crooked Creek: Beaver Co.	OK620930-00-0100G	veg	S	12	5	0.45	1.55	7.10	0.73	18	0.64	SI
		veg	W	7	2	0.14	0.86	5.98	0.88	10	0.42	MI
Crooked Creek: Grant Co.	OK621000-06-0010C	riffle	S	12	5	0.59	1.94	5.72	0.52	20	0.71	SI
		riffle	W	13	4	0.10	1.70	6.07	0.62	20	0.83	NI
		veg	S	12	6	0.30	1.67	6.53	0.64	22	0.79	SI

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
		veg	W	14	2	0.01	1.57	6.49	0.72	12	0.55	SI
		woody	S	16	7	0.28	2.11	5.81	0.52	24	0.86	NI
Dead Indian Creek	OK620910-05-0080D	riffle	S	9	3.5	0.35	1.17	6.48	0.84	12	0.43	MI
		riffle	W	10	3.5	0.13	1.20	5.94	0.77	16	0.67	SI
		veg	S	12	4.5	0.17	1.27	6.94	0.84	14	0.50	MI
		veg	W	11	1	0.01	0.96	6.32	0.87	12	0.55	SI
		woody	S	11	5	0.19	1.09	7.03	0.84	12	0.43	MI
		woody	W	6	1	0.03	0.49	6.03	0.94	8	0.36	MI
Deep Creek	OK620910-02-0250C	veg	S	10	5	0.35	1.59	6.40	0.68	24	0.86	NI
		veg	W	8	2	0.05	0.70	6.02	0.89	10	0.45	MI
		woody	S	12	6.5	0.24	1.57	6.61	0.67	20	0.71	SI
		woody	W	8	2	0.04	0.96	6.07	0.82	10	0.45	MI
Deer Creek	OK621000-04-0010D	riffle	S	15	7.5	0.41	1.87	5.74	0.57	24	0.86	NI
		riffle	W	6	1.5	0.05	0.48	5.85	0.93	8	0.33	MI
		woody	S	14	7	0.40	1.74	6.30	0.64	26	0.93	NI
		woody	W	7	1	0.01	0.95	6.52	0.92	8	0.36	MI
Driftwood Creek	OK621010-03-0030C	riffle	S	14	6	0.19	1.44	6.86	0.73	16	0.57	SI
		veg	S	3	0	0.00	1.04	6.75	0.75	4	0.14	SVI
		veg	W	10	1	0.04	1.55	6.28	0.74	14	0.64	SI
		woody	S	7.5	2.5	0.10	1.05	7.32	0.81	6	0.21	MI
		woody	W	9	2	0.02	1.39	6.92	0.72	8	0.36	MI
Duck Pond Creek	OK720500-02-0250F	veg	S	16	2	0.25	1.98	6.64	0.59	18	0.64	SI
		veg	W	5	0	0.00	1.13	6.29	0.84	6	0.25	MI
Dugout Creek	OK620900-03-0080C	riffle	S	17	8	0.47	2.12	5.68	0.49	24	0.86	NI
		riffle	W	16	7	0.30	2.21	5.98	0.42	24	1.00	NI
		veg	S	8	4	0.31	1.41	6.56	0.69	16	0.57	SI
		woody	S	8	4	0.19	1.11	7.03	0.79	8	0.29	MI
		woody	W	8	2	0.20	1.88	5.77	0.45	14	0.64	SI
Eagle Chief Creek: Lower	OK620920-04-0010C	woody	S	17	8.5	0.44	1.91	6.01	0.64	26	0.93	NI
		woody	W	6	1	0.01	0.73	6.23	0.92	8	0.36	MI
Eagle Chief Creek: Upper	OK620920-04-0010G	riffle	S	15	5	0.14	2.21	6.65	0.39	18	0.64	SI
		riffle	W	13	3	0.05	1.66	6.06	0.66	16	0.67	SI
		veg	S	11	7	0.74	1.49	4.80	0.72	22	0.79	SI
		veg	W	10	1	0.02	0.68	6.07	0.91	12	0.55	SI
		woody	S	11	5	0.74	1.52	4.77	0.71	20	0.71	SI
		woody	W	14	4	0.11	1.42	6.30	0.80	16	0.73	SI
Gray Horse Creek	OK621200-01-0400C	riffle	S	12	6.5	0.70	1.49	4.77	0.72	18	0.64	SI
		riffle	W	13	3	0.29	1.72	5.66	0.65	18	0.69	SI
		woody	W	3	1	0.85	0.54	4.23	0.92	*	*	*
Griever Creek	OK620920-01-0130G	riffle	S	13	4.5	0.44	2.00	5.50	0.48	20	0.71	SI
		riffle	W	9	2	0.40	1.69	5.46	0.66	18	0.75	SI
		veg	S	8	2	0.78	0.91	4.62	0.86	14	0.50	MI
Indian Creek: Major Co.	OK620910-02-0310C	veg	S	14	6.5	0.49	1.99	5.84	0.55	26	0.93	NI

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
		veg	W	7	0	0.00	0.64	6.20	0.92	8	0.36	MI
		woody	S	22	10	0.64	2.54	5.39	0.33	30	1.07	NI
		woody	W	7	0	0.00	0.47	6.09	0.94	8	0.36	MI
Indian Creek: Woodward Co.	OK720500-01-0200D	veg	S	19	7.5	0.55	2.35	5.24	0.40	28	1.00	NI
		veg	W	8	4	0.13	1.30	5.98	0.82	18	0.82	NI
		woody	S	15	9	0.44	2.27	6.17	0.44	26	0.93	NI
		woody	W	9	4	0.09	0.69	5.95	0.88	12	0.55	SI
Kingfisher Creek	OK620910-05-0010J	riffle	S	11	6.5	0.66	1.66	5.57	0.66	22	0.79	SI
		riffle	W	15	5.5	0.31	1.81	5.27	0.61	26	1.08	NI
		veg	S	15	5	0.14	1.33	7.22	0.78	18	0.64	SI
		woody	S	10	5.5	0.32	1.45	6.53	0.70	18	0.64	SI
Kiowa Creek: Beaver Co.	OK720500-02-0130M	riffle	S	15	5	0.32	1.77	4.10	0.66	26	0.93	NI
		veg	S	24	10	0.41	2.82	5.67	0.24	32	1.14	NI
		veg	W	10	2	0.04	0.89	6.03	0.86	10	0.42	MI
		woody	S	17	7	0.47	2.41	4.91	0.36	28	1.00	NI
		woody	W	17	6	0.13	1.34	6.02	0.78	20	0.83	NI
Kiowa Creek: Harper Co.	OK720500-02-0130C	veg	S	21	9.5	0.63	2.53	5.34	0.36	30	1.07	NI
		veg	W	11	5	0.10	1.36	6.08	0.75	14	0.58	SI
Lagoon Creek	OK620900-01-0180J	riffle	S	17	9	0.75	1.67	4.25	0.66	26	0.93	NI
		riffle	W	13	4.5	0.31	1.24	5.32	0.71	24	1.00	NI
		veg	W	19	7	0.16	2.36	6.62	0.43	20	0.91	NI
Long Creek	OK620920-02-0080D	riffle	S	13	5	0.90	1.29	4.02	0.79	22	0.79	SI
		veg	S	16	6	0.41	2.46	6.19	0.30	28	1.00	NI
		veg	W	10	3	0.08	0.65	6.06	0.91	14	0.64	SI
Main Creek	OK620920-01-0180F	veg	S	12	2	0.25	2.26	4.81	0.38	18	0.64	SI
		veg	W	11	4	0.13	1.64	5.85	0.67	22	1.00	NI
		woody	S	15	6	0.31	1.93	6.29	0.58	26	0.93	NI
		woody	W	10	5	0.14	1.18	5.79	0.79	18	0.82	NI
Medicine Lodge River	OK621010-03-0010D	riffle	S	9	3	0.07	1.11	6.04	0.81	6	0.21	MI
		veg	W	15	5	0.07	1.71	5.84	0.72	20	0.91	NI
		woody	S	14	7	0.50	2.21	5.08	0.48	26	0.93	NI
		woody	W	15	7	0.21	1.83	5.55	0.67	24	1.09	NI
Otter Creek: Logan Co.	OK620910-03-0040C	riffle	S	13	8	0.71	1.99	4.86	0.53	26	0.93	NI
		riffle	W	19	5	0.18	2.17	6.09	0.53	22	0.92	NI
		veg	S	8	5	0.55	1.55	5.55	0.72	22	0.79	SI
		woody	S	15	7.5	0.41	1.71	6.12	0.64	26	0.93	NI
Otter Creek: Harper Co.	OK720500-02-0050B	veg	S	16	2	0.45	1.92	5.46	0.62	20	0.71	SI
		veg	W	4	0	0.00	0.21	5.99	0.98	6	0.27	MI
Palo Duro Creek	OK720500-02-0500G	veg	S	9	1	0.04	1.63	6.28	0.62	10	0.36	MI
		veg	W	4	0	0.00	1.12	6.29	0.81	6	0.25	MI
Persimmon Creek	OK720500-01-0150G	riffle	S	13	5	0.61	1.94	5.25	0.57	24	0.86	NI
		riffle	W	12	5	0.33	2.32	4.29	0.38	28	1.17	NI
		veg	S	20	9	0.64	2.43	5.21	0.40	28	1.00	NI

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
		veg	W	19	9	0.37	2.11	5.40	0.52	26	1.18	NI
		woody	S	13	6	0.53	1.81	4.65	0.65	26	0.93	NI
		woody	W	11	5	0.28	1.36	5.63	0.74	22	1.00	NI
Pond Creek	OK621000-05-0010D	riffle	S	16	8	0.56	2.09	4.81	0.53	26	0.93	NI
		riffle	W	10	1	0.01	1.44	6.50	0.72	8	0.33	MI
		veg	S	13	6	0.25	1.55	6.42	0.69	22	0.79	SI
		woody	S	12	6	0.49	1.74	5.89	0.64	24	0.86	NI
		woody	W	8	1	0.07	1.72	6.34	0.58	12	0.55	SI
Red Rock Creek: Lower	OK621200-05-0010K	riffle	S	14	7	0.72	1.63	4.75	0.68	26	0.93	NI
		riffle	W	16	4	0.16	1.76	5.71	0.64	22	0.92	NI
		veg	S	8	3	0.84	0.99	4.21	0.83	14	0.50	MI
		woody	S	10	6	0.92	1.22	4.19	0.86	22	0.79	SI
Red Rock Creek: Upper	OK621200-05-0010M	riffle	S	8	3	0.35	1.63	6.16	0.63	14	0.50	MI
		riffle	W	14	5	0.10	1.59	5.71	0.66	22	0.92	NI
		veg	S	13	7	0.50	1.65	5.74	0.74	24	0.86	NI
		woody	S	9.5	5.5	0.55	1.47	5.50	0.74	20	0.71	SI
Salt Creek: Payne Co.	OK620900-02-0020D	riffle	S	12	7	0.61	1.85	4.75	0.56	24	0.86	NI
		riffle	W	22	9	0.35	2.63	5.58	0.28	32	1.33	NI
		woody	S	12	7	0.48	1.87	5.39	0.53	24	0.86	NI
Salt Creek: Kingfisher Co.	OK620910-02-0100D	riffle	S	7	1	0.01	0.99	6.24	0.84	6	0.21	MI
		veg	S	7	1	0.01	1.22	7.05	0.85	6	0.21	MI
		veg	W	3	0	0.00	0.66	6.00	0.99	6	0.27	MI
		woody	S	7.5	1	0.03	1.23	6.62	0.81	6	0.21	MI
		woody	W	7	1	0.01	0.91	5.93	0.95	8	0.36	MI
Salt Creek: Lower	OK621200-04-0010F	riffle	S	17	9.5	0.59	2.15	5.23	0.50	26	0.93	NI
		riffle	W	17	9	0.44	2.05	5.91	0.53	26	1.00	NI
Salt Creek: Upper	OK621200-04-0010P	riffle	S	19	8	0.60	2.43	4.64	0.39	26	0.93	NI
		riffle	W	11	8	0.32	1.17	5.89	0.86	22	0.85	NI
Salt Fork of Arkansas River	OK621010-01-0010D	riffle	S	10	4	0.50	1.43	6.26	0.74	14	0.50	MI
		veg	S	10	5	0.26	1.77	6.12	0.59	22	0.79	SI
Sand Creek	OK620920-05-0050J	veg	S	11	2	0.09	1.46	7.28	0.70	8	0.29	MI
Sandy Creek	OK621010-02-0010D	veg	S	11	7	0.76	1.83	4.91	0.59	24	0.86	NI
		woody	S	11	8	0.82	1.79	4.68	0.59	24	0.86	NI
Skeleton Creek: Lower	OK620910-03-0010F	riffle	W	15	3	0.03	1.91	6.32	0.54	14	0.58	SI
Skeleton Creek: Upper	OK620910-03-0010S	riffle	S	14	7	0.63	2.06	5.10	0.49	26	0.93	NI
		woody	S	15	9	0.70	2.14	5.02	0.50	26	0.93	NI
		woody	W	12	4	0.23	1.79	5.71	0.58	20	0.91	NI
Spring Creek	OK720500-02-0100D	veg	S	14	3	0.36	1.88	5.23	0.61	20	0.71	SI
		veg	W	9	1	0.04	1.86	6.38	0.58	12	0.50	MI
Stillwater Creek: Lower	OK620900-04-0040C	riffle	S	12	5	0.30	1.62	6.35	0.71	18	0.64	SI
		riffle	W	10	3	0.09	1.25	5.85	0.79	12	0.50	MI
Stillwater Creek: Upper	OK620900-04-0070T	riffle	S	12	4	0.42	1.60	5.50	0.72	16	0.57	SI
		riffle	W	13	4	0.48	2.00	5.39	0.51	26	1.08	NI

Sitename	WBID	Sample Type	Winter or Summer	Total Species	EPT Taxa	Percent EPT	Shannon Diversity	HBI	Percent Dominant 2 Taxa	Total Points	% of Reference	Condition
		woody	S	7	4	0.51	1.65	5.45	0.56	16	0.57	SI
		woody	W	15	4	0.60	1.94	5.00	0.54	22	1.00	NI
Turkey Creek: Woods Co.	OK621010-01-0230G	riffle	S	12	3	0.82	1.25	4.54	0.82	16	0.57	SI
		riffle	W	13	4	0.53	1.55	4.89	0.71	26	1.08	NI
Turkey Creek: Lower	OK620910-06-0010B	woody	S	14	7	0.24	1.51	6.76	0.73	22	0.79	SI
		woody	W	6	0	0.00	1.40	6.72	0.72	6	0.27	MI
Turkey Creek: Upper	OK620910-06-0010T	veg	W	11	3	0.02	1.04	6.28	0.85	14	0.64	SI
		woody	S	12	6	0.14	1.12	7.18	0.80	16	0.57	SI
		woody	W	12	3	0.04	1.28	6.16	0.79	12	0.55	SI
Uncle John's Creek	OK620910-05-0030C	woody	S	11	5.5	0.61	1.50	5.54	0.72	20	0.71	SI
		woody	W	10	4.5	0.11	1.12	5.93	0.80	16	0.73	SI
West Clay Creek	OK621010-01-0090R	riffle	W	8	0	0.00	1.36	7.48	0.78	6	0.25	MI
		veg	S	6	0.5	0.02	0.93	6.21	0.82	6	0.21	MI
		veg	W	6	0	0.00	1.43	6.55	0.67	6	0.27	MI
Wolf Creek: Lower	OK720500-02-0030M	riffle	S	16	7	0.83	1.30	4.51	0.74	24	0.86	NI
		riffle	W	21	2	0.21	2.09	5.87	0.51	18	0.75	SI
Wolf Creek: Upper	OK720500-03-0010G	veg	S	15	6.5	0.58	2.11	5.26	0.50	26	0.93	NI
		veg	W	13	4	0.05	1.48	6.03	0.79	12	0.50	MI
		woody	S	17	9	0.79	1.89	4.97	0.60	26	0.93	NI
		woody	W	10	3	0.04	1.32	5.94	0.76	10	0.42	MI
Yellowstone Creek	OK621010-01-0270C	riffle	W	15	6	0.76	1.90	2.84	0.64	26	1.08	NI
		veg	S	12	5	0.69	1.97	4.33	0.56	24	0.86	NI
		veg	W	17	6	0.73	2.02	3.58	0.54	26	1.18	NI

Table 16. Overall bioassessment of sites based on all macroinvertebrate collections at a site (averaged over all seasons and habitat types). NI=non-impaired, SI=slightly impaired, MI=moderately impaired, SVI=severely impaired.

Site Name	WBID	Overall Biological Condition	Site Name	WBID	Overall Biological Condition
Beaver Creek: Logan Co.	OK620900-03-0230C	NI	Kiowa Creek: Beaver Co.	OK720500-02-0130M	NI
Beaver Creek: Osage Co.	OK621210-00-0050L	MI	Kiowa Creek: Harper Co.	OK720500-02-0130C	NI
Bent Creek	OK720500-01-0070D	NI	Lagoon Creek	OK620900-01-0180J	NI
Bitter Creek	OK621100-00-0100G	SI	Long Creek	OK620920-02-0080D	SI
Black Bear Creek: Lower	OK621200-03-0010D	NI	Main Creek	OK620920-01-0180F	NI
Black Bear Creek: Middle	OK621200-03-0010M	NI	Medicine Lodge River	OK621010-03-0010D	NI
Black Bear Creek: Upper	OK621200-03-0010W	NI	Otter Creek: Logan Co.	OK620910-03-0040C	NI
Bois d'Arc Creek	OK621000-03-0010C	SI	Otter Creek: Harper Co.	OK720500-02-0050B	MI
Buffalo Creek: Lower	OK620920-05-0010G	SI	Palo Duro Creek	OK720500-02-0500G	MI
Buffalo Creek: Upper	OK620920-05-0010P	SI	Persimmon Creek	OK720500-01-0150G	NI
Chickaskia River: Lower	OK621100-00-0010B	MI	Pond Creek	OK621000-05-0010D	SI
Chickaskia River: Upper	OK621100-00-0010M	SI	Red Rock Creek: Lower	OK621200-05-0010K	NI
Chilocco Creek	OK621210-00-0270C	NI	Red Rock Creek: Upper	OK621200-05-0010M	SI
Cimarron River	OK620930-00-0010T	MI	Salt Creek: Payne Co.	OK620900-02-0020D	NI
Clear Creek: Harper Co.	OK720500-02-0070G	NI	Salt Creek: Kingfisher Co.	OK620910-02-0100D	MI
Clear Creek: Beaver Co.	OK720500-02-0300F	SVI	Salt Creek: Lower	OK621200-04-0010F	NI
Cooper Creek	OK620910-02-0040C	MI	Salt Creek: Upper	OK621200-04-0010P	NI
Cottonwood Creek	OK620910-04-0010D	NI	Salt Fork of Arkansas River	OK621010-01-0010D	SI
Council Creek	OK620900-02-0050H	NI	Sand Creek	OK620920-05-0050J	MI
Crooked Creek: Beaver Co.	OK620930-00-0100G	MI	Sandy Creek	OK621010-02-0010D	NI
Crooked Creek: Grant Co.	OK621000-06-0010C	SI	Skeleton Creek: Lower	OK620910-03-0010F	SI
Dead Indian Creek	OK620910-05-0080D	MI	Skeleton Creek: Upper	OK620910-03-0010S	NI
Deep Creek	OK620910-02-0250C	SI	Spring Creek	OK720500-02-0100D	SI
Deer Creek	OK621000-04-0010D	SI	Stillwater Creek: Lower	OK620900-04-0040C	SI
Driftwood Creek	OK621010-03-0030C	SI	Stillwater Creek: Upper	OK620900-04-0070T	SI
Duck Pond Creek	OK720500-02-0250F	MI	Turkey Creek: Woods Co.	OK621010-01-0230G	SI
Dugout Creek	OK620900-03-0080C	SI	Turkey Creek: Lower	OK620910-06-0010B	SI
Eagle Chief Creek: Lower	OK620920-04-0010C	SI	Turkey Creek: Upper	OK620910-06-0010T	SI
Eagle Chief Creek: Upper	OK620920-04-0010G	SI	Uncle John's Creek	OK620910-05-0030C	SI
Gray Horse Creek	OK621200-01-0400C	SI	West Clay Creek	OK621010-01-0090R	MI
Griever Creek	OK620920-01-0130G	SI	Wolf Creek: Lower	OK720500-02-0030M	NI
Indian Creek: Major Co.	OK620910-02-0310C	NI	Wolf Creek: Upper	OK720500-03-0010G	SI
Indian Creek: Woodward Co.	OK720500-01-0200D	NI	Yellowstone Creek	OK621010-01-0270C	NI
Kingfisher Creek	OK620910-05-0010J	SI			

Most sites had either non-impaired or slightly impaired macroinvertebrate communities overall; only one stream (Clear Creek Beaver Co.) was severely impaired, and 12 streams were moderately impaired. Poor macroinvertebrate scores could indicate water quality problems where habitat scores are acceptable; however, it is possible that the macroinvertebrate collection

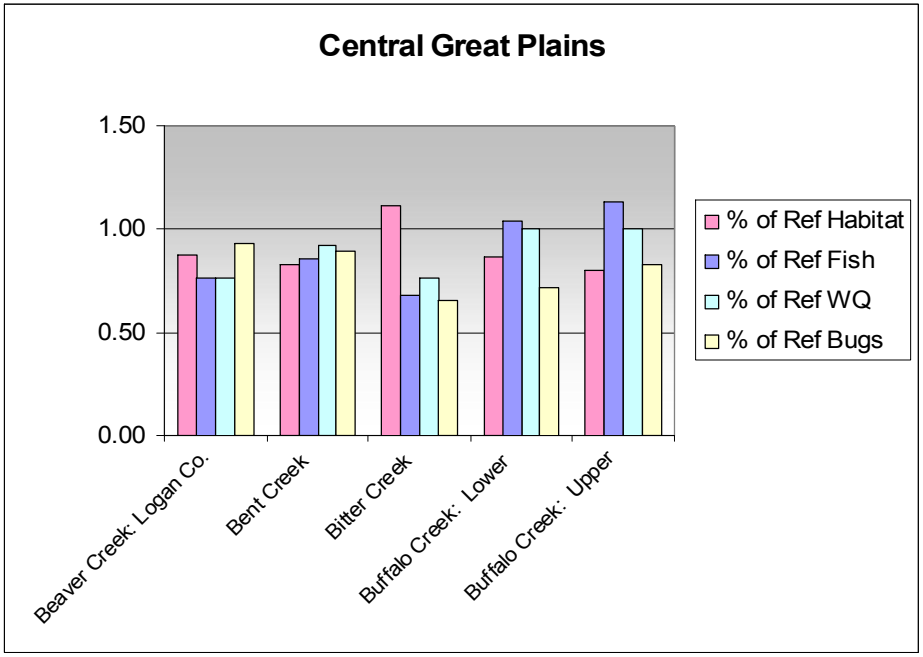
was not taken at a time which would best represent the community there (i.e., drought influences, especially in the panhandle). Hence, the macroinvertebrate scores should be examined in conjunction with habitat and fish scores to better represent the general health of the stream.

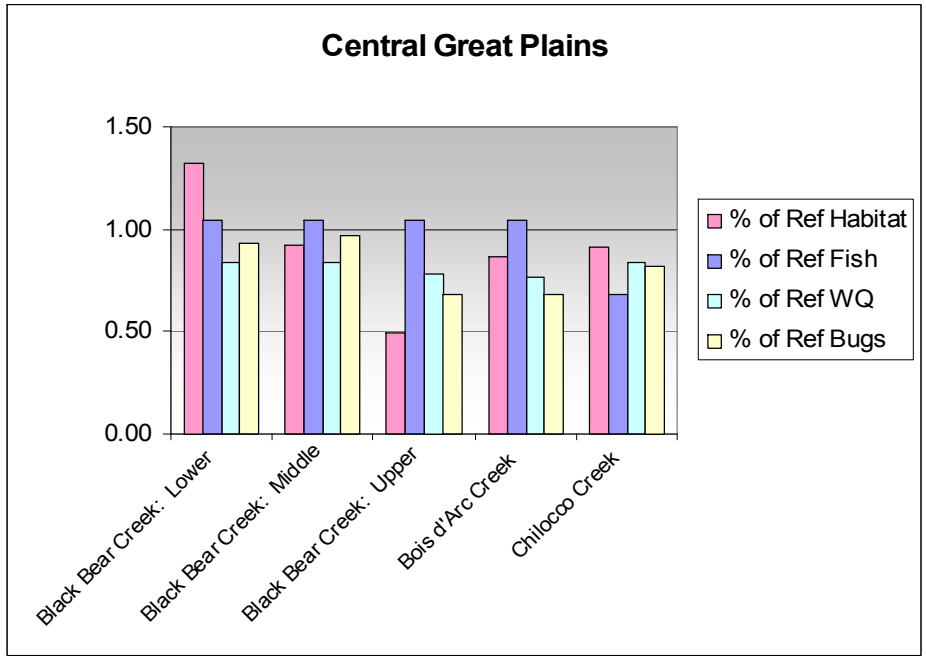
3.2.4 Overall Biological Assessment

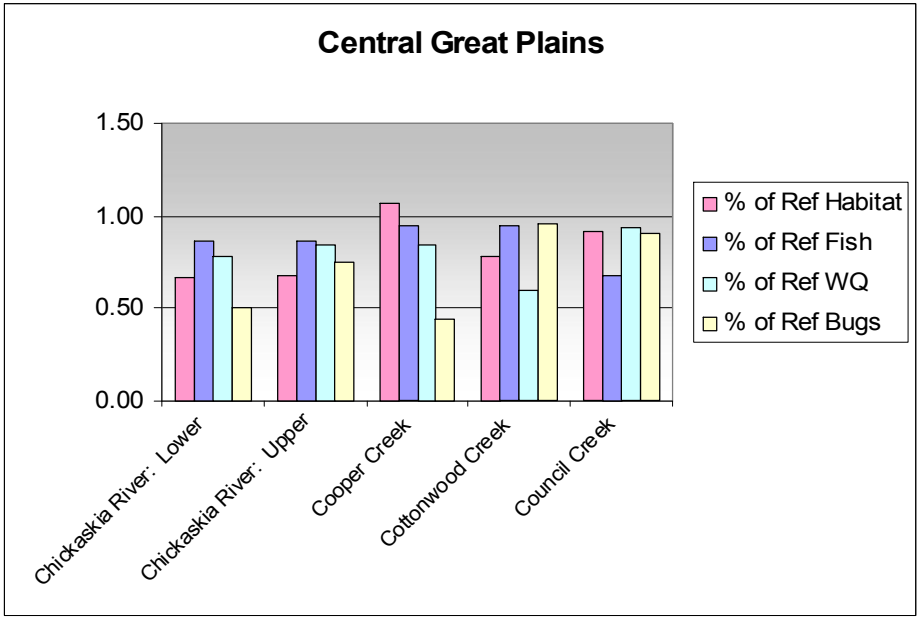
In order to synthesize the biological findings into a meaningful representation of the overall quality of each site, the biological assessments were compared with the habitat and water chemistry results. A water quality score was computed similarly to the other index scores by comparing rotating basin site values relative to high quality site values. The parameters included in this score were phosphorus, nitrogen, DO, turbidity, and salts (TDS, chloride, and sulfate). Then, the habitat, fish, water quality, and macroinvertebrate scores (relative to the mean of high quality sites in the respective ecoregions) were examined in concert with one another (Figure 6). A determination of "good" or "excellent" stream health is indicated by a relatively high score for all four categories. It is generally recognized that fish communities are especially sensitive to habitat degradation and that macroinvertebrates more quickly integrate effects of water quality decline. Thus, sites with a high habitat and fish score yet a low macroinvertebrate and water chemistry score, for example Pond Creek and Upper Red Rock Creek, could indicate potential water quality impairment. Low habitat scores correlated with low fish scores yet high bug scores suggests that habitat impairments are the predominant cause of the poor fish community.

In the Central Great Plains ecoregion, Bitter Creek, the Salt Fork of the Arkansas River, and Lower Skeleton Creek stand out as having a water chemistry issue resulting in biological impairment despite excellent habitat. The Upper Skeleton Creek site has much better water quality and fish than the lower site. Also, the Lower Skeleton Creek site had a "poor" fish community this second cycle, whereas it had an "excellent" community in the first monitoring cycle. The macroinvertebrate community is slightly impaired at the Lower Skeleton Creek site while it is nonimpaired at the Upper site. There are a number of additional NPDES permitted dischargers upstream of the Lower Skeleton Creek site relative to the Upper site, so it is possible that one or more of those could be impacting the biological community significantly.

Similarly, in the SWT ecoregion, the Cimarron River (Cimarron Co.), Duck Pond Creek, Otter Creek (Harper Co.), and Palo Duro Creek have excellent habitat scores relative to high quality sites yet have relatively low water chemistry and biological scores. Both Cimarron and Palo Duro have more than 10% of samples with low dissolved oxygen, so it is possible that this is one of the primary causes for the observed poor biological communities at these sites. As has already been mentioned, drought conditions in the SWT ecoregion could also have contributed to the poor biological communities.







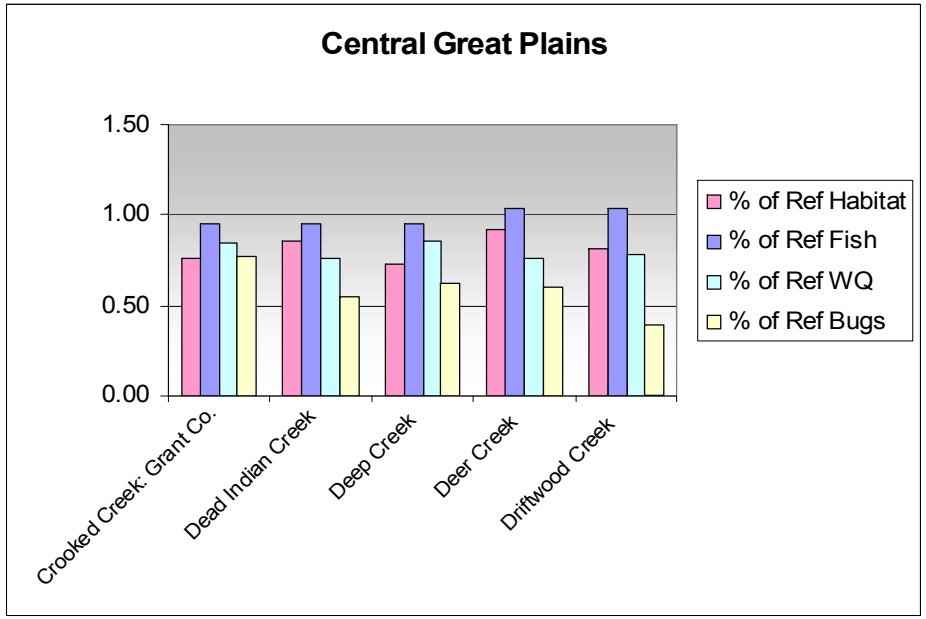


Figure 6. Comparison of habitat, fish, and bug scores relative to the average high quality site in each ecoregion.

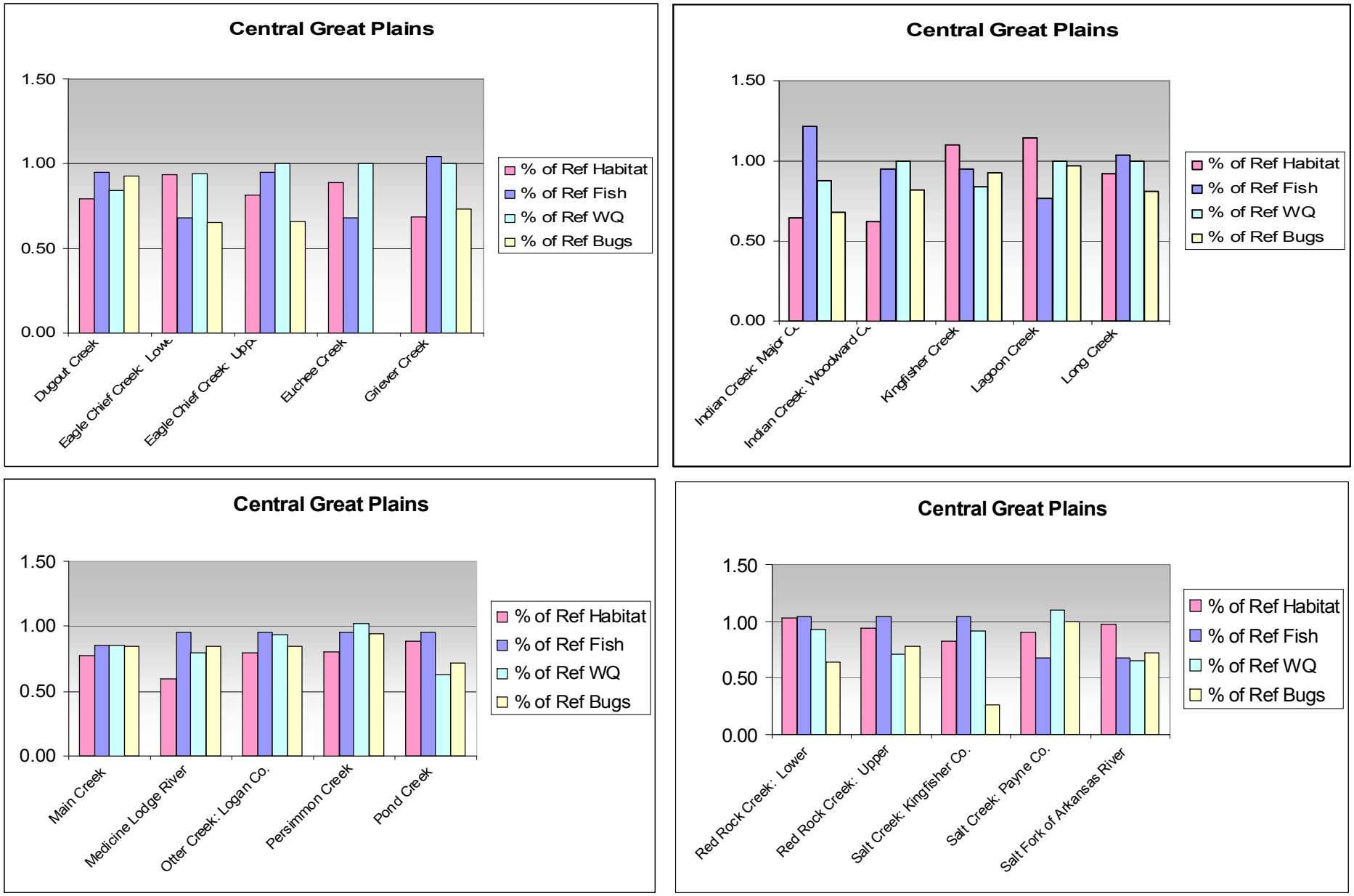
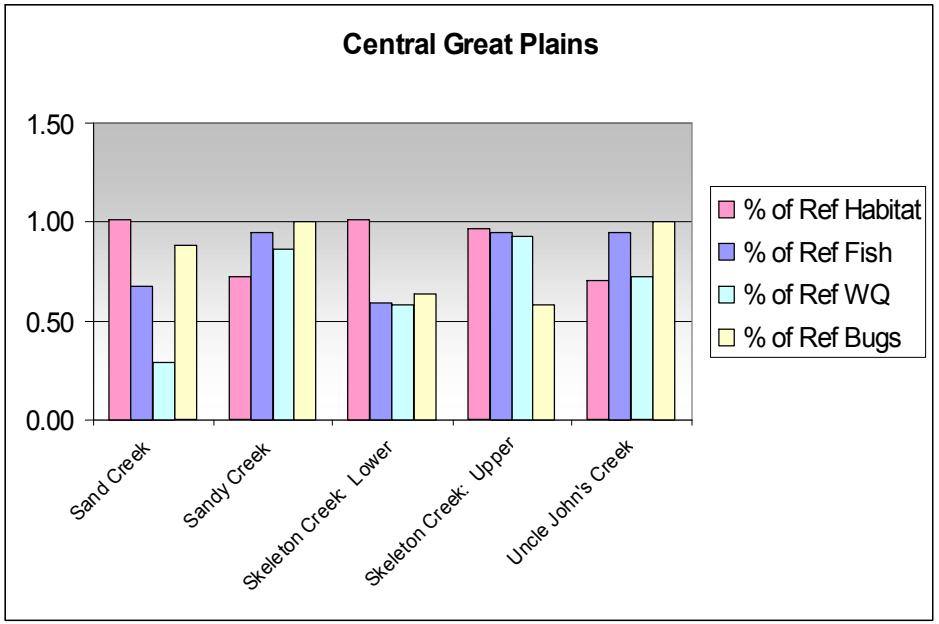
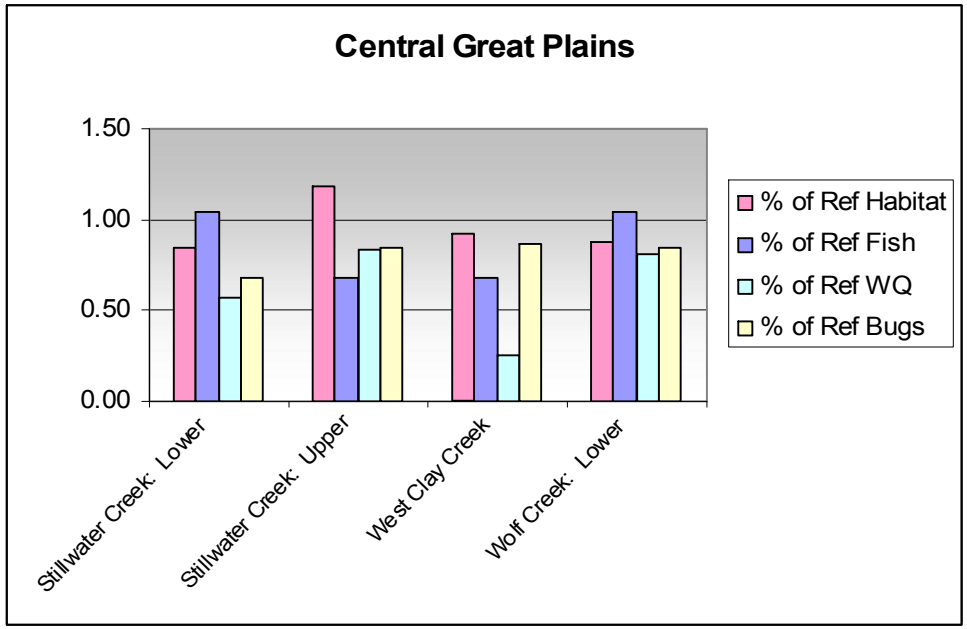
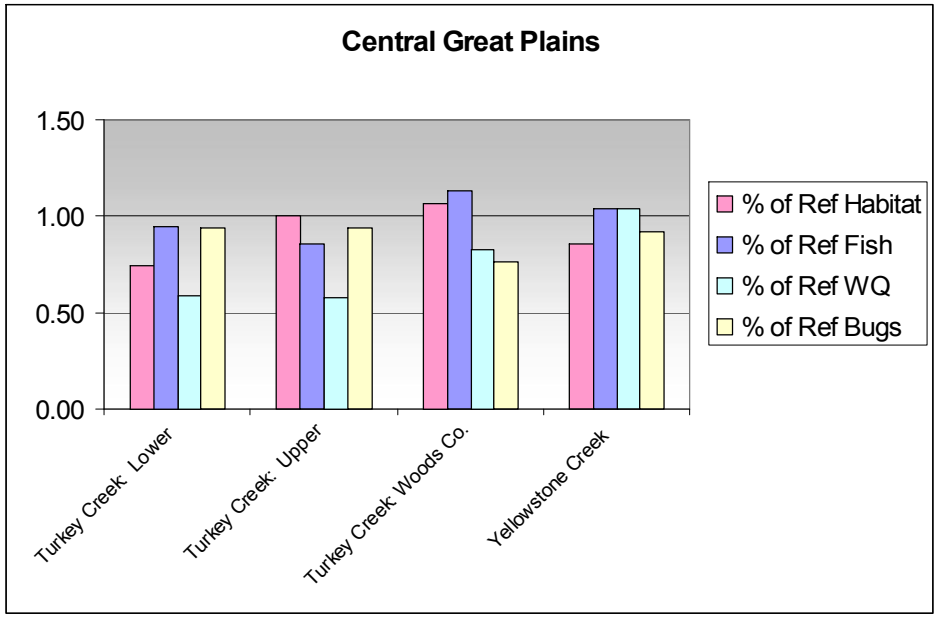


Figure 6, cont. Comparison of habitat, fish, and bug scores relative to the average high quality site in each ecoregion.







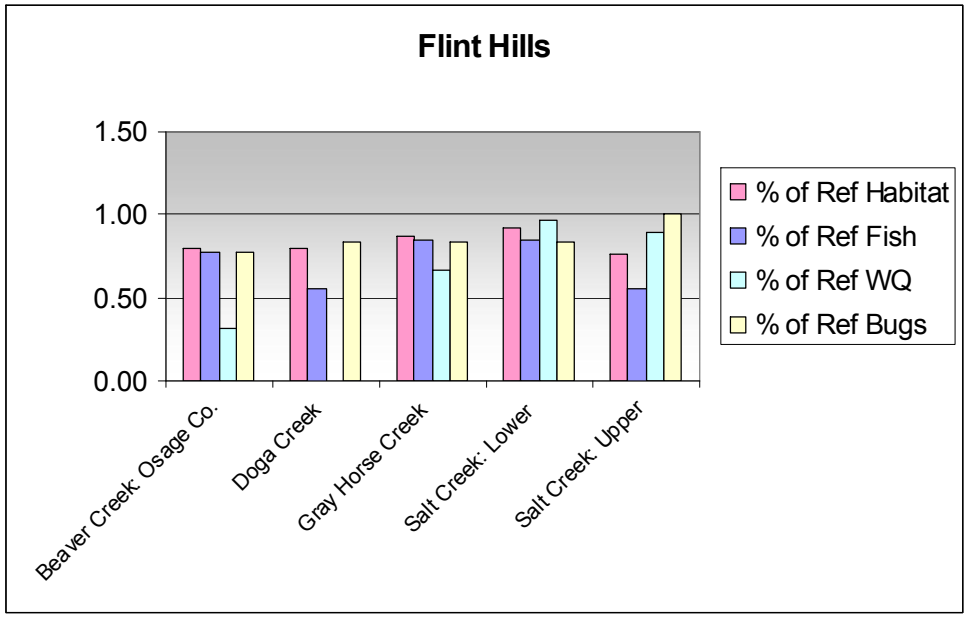
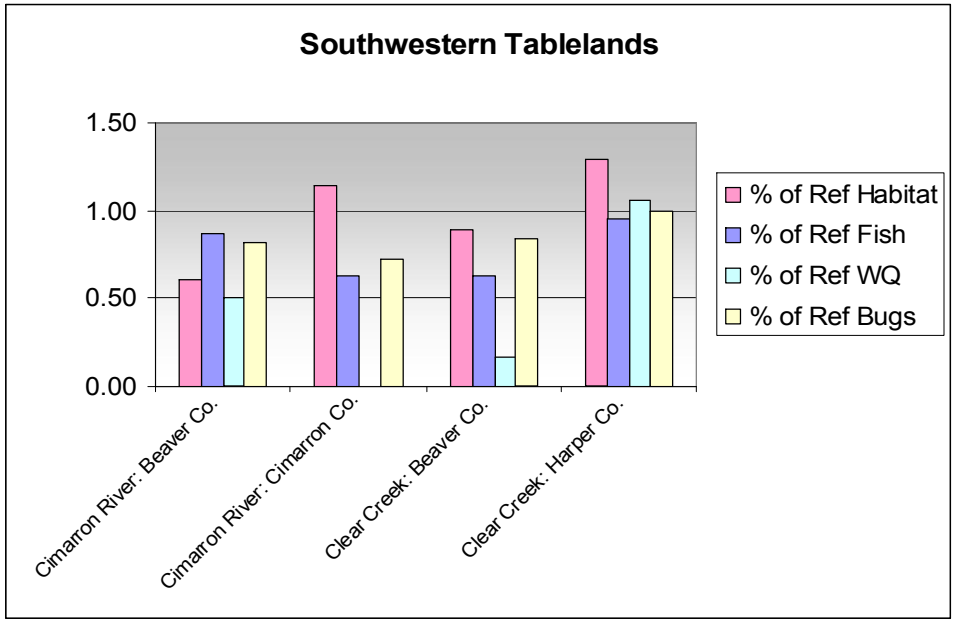
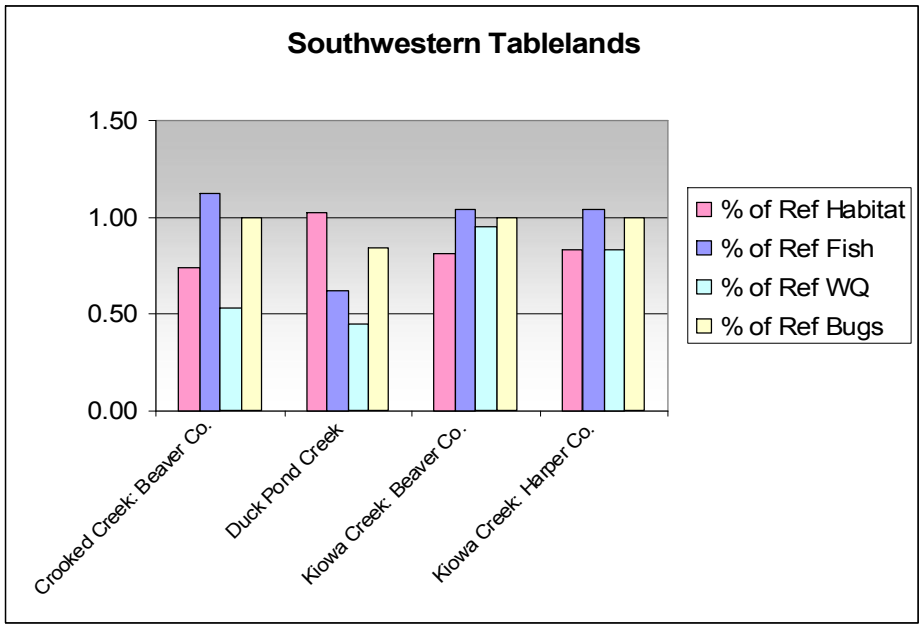


Figure 6, cont. Comparison of habitat, fish, and bug scores relative to the average high quality site in each ecoregion.





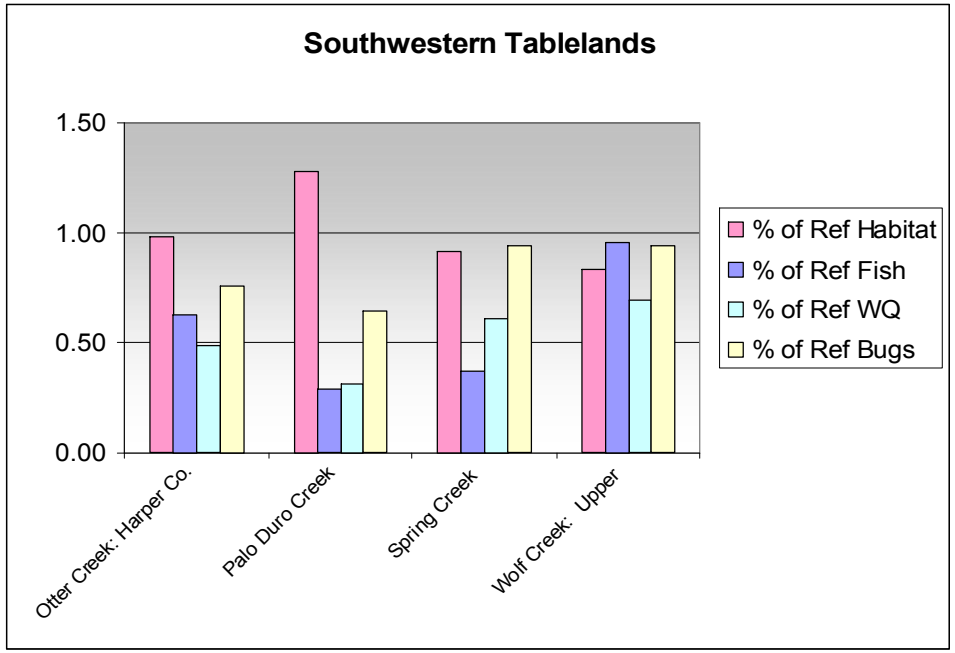


Figure 6, cont. Comparison of habitat, fish, and bug scores relative to the average high quality site in each ecoregion.

3.3 WATERSHED ASSESSMENT

Table 17 shows the landuse upstream of each monitoring site as obtained through GIS using the 2001 NRCS National Land Cover Dataset. As compared to the data reported in the 2007 report on these streams (Rotating Basin Group 2 Cycle 1), which was based on 1992 satellite imagery, there was very little change in landuse; however, the categories were slightly different than in the previous report. In general, the Cimarron basin is about 51% grassland, with another 32% comprised of cultivated cropland. The Upper Arkansas basin is predominantly grassland (46%) and cultivated cropland (43%). The Upper North Canadian basin is 67% grassland, 16% cultivated cropland, and 12% rangeland (shrub/scrub).

Table 18 presents the types and number of permitted activities that occur in the watershed upstream of each site. Thirty-six sites had only oil/gas well permits in the watershed. Eighteen sites currently have national pollution discharge elimination systems (NPDES). NPDES are classified as either major or minor based upon their size and/or their potential to impact the receiving stream, with majors having larger effects than minors. Skeleton (Upper and Lower), Stillwater (Lower), Cottonwood, and Euchee Creeks had at least one major NPDES, while the other sites only had minor NPDES (Table 18). The report on the cycle 1 data examined the effects of point source versus non-point source pollution on nutrient levels at the monitoring sites and found that nutrients tended to be significantly higher at sites with a NPDES in the watershed. The significant effect of a major NPDES on water quality is also evident in Figure 2, since all of those sites had mean values which exceeded the high quality range with the exception of Euchee Creek. In the first cycle of monitoring, Euchee Creek had significantly high nutrient concentrations; however, this was not observed in this second cycle of monitoring.

Three sites which had high nutrient values but no major NPDES were Cimarron Beaver Co. and Turkey Creek (Lower and Upper). These sites exhibited high nutrient concentrations in the first cycle as well. Further examination of the landuse in these watersheds will be conducted to attempt to explain what is causing this. Potential sources of pollution for impaired streams are included on the 2008 303(d) list (ODEQ 2008).

Table 17. Watershed landuse (% of total watershed area) for each Group 2 monitoring site based on the most recent NLCD (USGS 2001).

Water Body	WBID	% Barren Land (Rock/Sand/Clay)	% Cultivated Crops	% Deciduous Forest	% Developed, High Intensity	% Developed, Low Intensity	% Developed, Medium Intensity	% Developed, Open Space	% Emergent Herbaceous Wetlands	% Evergreen Forest	% Grassland/ Herbaceous	% Mixed Forest	% Open Water	% Pasture/ Hay	% Shrub/ Scrub	% Woody Wetlands	Total Acres in Watershed
Beaver Creek: Logan Co.	OK620900-03-0230C	17.5		8.4		0.1	0.1	5.6		1.8	65.8		0.7				53,113
Beaver Creek: Osage Co.	OK621210-00-0050L	4.0		1.8				2.1	0.2		75.5		0.6	9.9		5.7	29,229
Bent Creek	OK720500-01-0070D	24.0				0.1		5.0		6.4	63.1		0.1		1.2		82,814
Bitter Creek	OK621100-00-0100G		59.6	0.5		0.6	0.1	5.5	0.1		24.1		0.3	7.3		2.0	53,856
Black Bear Creek: Lower	OK621200-03-0010D		26.9	9.1	0.1	0.8	0.2	5.1		0.3	54.5		1.1	1.9			405,500
Black Bear Creek: Middle	OK621200-03-0010M		35.2	5.3	0.1	0.8	0.3	5.4		0.3	50.7		1.2	0.8			269,325
Black Bear Creek: Upper	OK621200-03-0010W		42.8	4.7	0.1	0.8	0.4	5.7		0.3	43.5		1.3	0.3			183,135
Bois d'Arc	OK621000-03-0010C		56.3	0.8	0.3	3.4	0.8	5.4	0.3		19.0		0.3	10.2	0.2	3.2	63,237
Buffalo Creek: Upper	OK620920-05-0010P		22.4	0.1		0.2	0.1	3.7			72.7		0.5	0.2		0.2	150,793
Buffalo Creek: Lower	OK620920-05-0010G		20.5	0.1		0.2		3.1		0.3	74.6		0.5	0.2	0.3	0.2	257,189
Chickaskia Creek: Lower	OK621100-00-0010B		65.9	0.5		1.2	0.2	5.0	0.1		17.4		1.1	6.3		2.3	237,912
Chickaskia River: Upper	OK621100-00-0010M		66.4	0.2		0.5		4.3			20.8		1.6	3.8	0.1	2.2	82,830
Chilocco Creek	OK621210-00-0270C	38.5		7.0		0.3		4.6	0.1		38.6		0.6	7.6		2.8	20,327
Cimarron River: Cimarron Co.	OK720900-00-0180C		0.4	0.1			0.5		0.3	0.7	63.4		0.1		34.0	0.5	108,741
Cimarron River: Beaver Co.	OK620930-00-0010T	0.3	25.4			0.1		3.2			64.3		0.7		5.8	0.3	97,532
Clear Creek: Harper Co.	OK720500-02-0070G	0.4	10.4			0.1		1.9			82.1		0.1		4.7	0.4	67,393
Clear Creek: Beaver Co.	OK720500-02-0300F		33.3			0.1		2.9			56.7				6.9	0.1	134,134
Cooper Creek	OK620910-02-0040C		63.4	0.5		0.3		4.9		0.7	29.8		0.2	0.1			75,129
Cottonwood Creek	OK620910-04-0010D		26.7	9.7	1.3	5.5	4.2	8.8		0.8	40.4		2.1	0.5			226,161
Council Creek	OK620900-02-0050H	4.6		17.2		0.3		4.7		2.6	65.2		0.4	5.0			27,113
Crooked Creek: Beaver Co.	OK620930-00-0100G	1.3						2.0			95.6		1.0			0.1	4,291
Crooked Creek: Grant Co.	OK621000-06-0010C		52.3	1.4		0.5		4.1	0.6		38.4		0.2	0.2	0.7	1.6	129,924
Deep Creek	OK620910-02-0250C	0.2	58.4	0.6		1.1		3.7		3.4	32.3	0.1	0.2	0.1			70,795
Dead Indian Creek	OK620910-05-0080D	0.1	59.6	1.2		0.6		3.4		0.1	34.0		0.4	0.7			28,936
Deer Creek	OK621000-04-0010D	75.1		0.2		0.2		4.4	0.2		15.7		0.3	1.6		2.2	98,322
Doga Creek	OK621200-02-0020C	5.4		7.7				3.8	1.2		60.4		0.7	12.1	3.5	5.3	19,617
Driftwood Creek	OK621010-03-0030C		79.4	0.3		0.2		4.4			14.7		0.2	0.4		0.3	78,554

Water Body	WBID	% Barren Land (Rock/Sand/Clay)	% Cultivated Crops	% Deciduous Forest	% Developed, High Intensity	% Developed, Low Intensity	% Developed, Medium Intensity	% Developed, Open Space	% Emergent Herbaceous Wetlands	% Evergreen Forest	% Grassland/ Herbaceous	% Mixed Forest	% Open Water	% Pasture/ Hay	% Shrub/ Scrub	% Woody Wetlands	Total Acres in Watershed
Duck Pond Creek	OK720500-02-0250F	0.1	42.4			0.1		2.5			47.2				7.7		49,541
Dugout Creek	OK620900-03-0080C	6.3		19.4		0.1		5.0		2.0	61.5		0.4	5.4			18,643
Eagle Chief Creek: Lower	OK620920-04-0010C		54.5	0.7		0.3		4.1	0.1	0.1	39.3		0.4	0.1		0.2	308,108
Euchee Creek	OK620900-01-0290D	2.9		26.2	0.3	2.2	0.6	6.0		1.0	55.3		0.5	4.9			56,643
Gray Horse Creek	OK621200-01-0400C	0.7		8.2				3.1			87.3		0.2	0.4			27,427
Griever Creek	OK620920-01-0130G		5.3	1.0		0.5		3.3		22.4	64.0	3.3	0.1		0.1		24,238
Indian Creek: Woodward Co.	OK720500-01-0200D		21.1			0.7	0.1	5.1		1.5	67.3				4.2		48,754
Indian Creek: Major Co.	OK620910-02-0310C	0.1	51.5	7.7		0.6	0.1	6.5		2.1	31.0		0.3	0.1			60,878
Kingfisher Creek	OK620910-05-0010J	0.1	53.2	1.5		0.3		3.8		2.2	38.3		0.5	0.1			120,544
Kiowa Creek: Harper Co.	OK720500-02-0130C	0.2	15.6			0.2		2.2			73.0				8.4	0.3	258,060
Kiowa Creek: Beaver Co.	OK720500-02-0130K	0.1	17.3			0.3		1.9			68.8				11.6	0.1	163,306
Lagoon Creek	OK620900-01-0180J	3.5		28.2		0.4	0.1	5.0		1.4	57.2		0.2	4.0			33,888
Long Creek	OK620920-02-0080D	25.8				0.2		3.5		9.5	59.7		0.2		1.2		34,501
Main Creek	OK620920-01-0180F	0.3	9.2			0.4	0.1	3.8		19.3	65.2		0.1		1.6		59,038
Medicine Lodge Creek	OK621010-03-0010D		81.8	0.3		0.2		3.7			10.9		1.8	0.7		0.6	46,397
Otter Creek: Logan Co.	OK620910-03-0040C	47.1		6.7		0.2		4.3		1.7	39.4		0.3	0.2			75,106
Otter Creek: Harper Co.	OK720500-02-0050B	0.1	20.8			0.2		2.8			74.7		0.2	0.2	0.1	0.8	27,540
Palo Duro Creek	OK720500-02-0500G		2.2					0.1			95.3				2.2	0.2	22,057
Persimmon Creek	OK720500-01-0150G		19.9			0.3		4.7		1.8	59.5		0.1	0.4	13.3		106,887
Pond Creek	OK621000-05-0010D		64.0	0.1		0.5	0.1	4.5	1.1		27.0		0.4	0.3		2.0	198,097
Red Rock Creek: Lower	OK621200-05-0010K		55.3	3.1		0.5	0.2	4.8			35.1		0.6	0.3			294,535
Red Rock Creek: Upper	OK621200-05-0160G		56.3	1.5		0.8	0.9	5.7			33.3		0.8	0.7			16,319
Salt Creek: Payne Co.	OK620900-02-0020D	3.2		27.8		0.3	0.1	4.7		1.2	58.8		0.2	3.6			28,013
Salt Creek: Kingfisher Co.	OK620910-02-0100D	0.7	46.8	0.7		1.0	0.1	3.6		6.3	40.3		0.3				117,724
Salt Creek: Lower	OK621200-04-0010F		3.3	1.8		0.4		5.4	0.4		76.8		0.8	8.0	0.3	2.7	182,726
Salt Creek: Upper	OK621200-04-0010P	4.7		0.3		0.1		3.8	0.1		76.4		1.2	12.7		0.6	25,021
Salt Fork of Arkansas River	OK621010-01-0010D	2.1	47.2	1.2		0.5	0.1	3.5	0.4		41.1		2.9	0.2	0.2	0.8	609,126
Sand Creek	OK620920-05-0050G		16.4	0.3		0.1		2.6		0.1	78.6		0.5	0.1	0.8	0.5	42,116

Water Body	WBID	% Barren Land (Rock/Sand/Clay)	% Cultivated Crops	% Deciduous Forest	% Developed, High Intensity	% Developed, Low Intensity	% Developed, Medium Intensity	% Developed, Open Space	% Emergent Herbaceous Wetlands	% Evergreen Forest	% Grassland/ Herbaceous	% Mixed Forest	% Open Water	% Pasture/ Hay	% Shrub/ Scrub	% Woody Wetlands	Total Acres in Watershed
Sandy Creek	OK621010-02-0010D		32.2	2.6		0.1		3.5	0.1		60.1		0.4	0.3		0.7	48,059
Skeleton Creek: Upper	OK620910-03-0010S		55.0	1.7	0.7	3.0	1.2	6.6			31.3		0.3	0.1			229,210
Skeleton Creek: Lower	OK620910-03-0010F		49.9	3.6	0.4	1.9	0.8	5.8		0.8	36.3		0.4	0.2			381,234
Spring Creek	OK720500-02-0100D	0.2	19.8			0.3		4.1			73.3		0.1		1.6	0.5	20,352
Stillwater Creek: Lower	OK620900-04-0040C		4.8	20.6	0.5	3.0	0.9	6.8		0.9	57.3		3.6	1.6			153,982
Stillwater Creek: Upper	OK620900-04-0070T	4.8		20.8		0.3	0.2	5.4		0.5	61.4		6.0	0.6			80,250
Turkey Creek: Woods Co.	OK621010-01-0230G		19.8	2.1		0.7		3.1			72.6		1.5			0.3	24,151
Turkey Creek: Lower	OK620910-06-0010B		67.5	1.8		0.7	0.2	5.2		0.1	24.1		0.3	0.1			264,448
Turkey Creek: Upper	OK620910-06-0010T		68.7	1.1		0.6	0.1	5.0			24.0		0.3	0.3			139,956
Uncle John's Creek	OK620910-05-0030C		55.2	2.8	0.1	0.7	0.2	4.7		0.2	34.8		1.3	0.1			93,374
Clay Creek	OK621010-01-0090R		60.9	0.4		0.5		4.6			33.2		0.2	0.1			37,368
Wolf Creek: Lower	OK720500-02-0030M	0.6	14.9			0.5		2.2			66.3	0.2	0.4		14.7	0.1	515,821
Wolf Creek: Upper	OK720500-03-0010G	0.6	14.6			0.4		2.1			66.1	0.2			15.7	0.1	474,219
Yellowstone Creek	OK621010-01-0270C	4.1		2.5				1.7			90.5		0.9			0.1	35,354

Table 18. Permitted landuse for each Group 2 monitoring site. For the NPDES category, the total number of NPDES in the watershed is given, followed by the number of major NPDES in parentheses, if applicable.

SiteName	WBID	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Land Apps.	# Landfill
Beaver Creek: Logan Co.	OK620900-03-0230C	742			2		
Beaver Creek: Osage Co.	OK621210-00-0050L	48					
Bent Creek	OK720500-01-0070D	254					
Bitter Creek	OK621100-00-0100G	1049			4		
Black Bear Creek: Lower	OK621200-03-0010D	4943		12	9	3	
Black Bear Creek: Middle	OK621200-03-0010M	3982					
Black Bear Creek: Upper	OK621200-03-0010W	3506					
Bois d'Arc Creek	OK621000-03-0010C	676		1	3	3	
Buffalo Creek: Lower	OK620920-05-0010G	1063	2	1	7		
Buffalo Creek: Upper	OK620920-05-0010P	622					
Chickaskia River: Lower	OK621100-00-0010B	1505					
Chickaskia River: Upper	OK621100-00-0010M	1590		1	3		
Chilocco Creek	OK621210-00-0270C	184			3		
Cimarron River: Beaver Co.	OK620930-00-0010T	659	9				
Cimarron River: Cimarron Co.	OK720900-00-0180C	10					
Clear Creek: Beaver Co.	OK720500-02-0300F	829	4		2		
Clear Creek: Harper Co.	OK720500-02-0070G	326	2				
Cooper Creek	OK620910-02-0040C	629	1				
Cottonwood Creek	OK620910-04-0010D	2811		8 (3 M)	19	9	
Council Creek	OK620900-02-0050H	286					
Crooked Creek: Beaver Co.	OK620930-00-0100G	12					
Crooked Creek: Grant Co.	OK621000-06-0010C	608	1		5		
Dead Indian Creek	OK620910-05-0080D	144	1	1			
Deep Creek	OK620910-02-0250C	497					
Deer Creek	OK621000-04-0010D	675					
Doga Creek	OK621200-02-0020C	94					
Driftwood Creek	OK621010-03-0030C	188			4		
Duck Pond Creek	OK720500-02-0250F	249					
Dugout Creek	OK620900-03-0080C	8					

SiteName	WBID	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Land Apps.	# Landfill
Indian Creek: Major Co.	OK620910-02-0310C	515		2			
Kingfisher Creek	OK620910-05-0010J	721					
Kiowa Creek: Harper Co.	OK720500-02-0130C	493					
Kiowa Creek: Beaver Co.	OK720500-02-0130M	518	1				
Lagoon Creek	OK620900-01-0180J	422					
Long Creek	OK620920-02-0080D	235					
Main Creek	OK620920-01-0180F	345	1				
Medicine Lodge River	OK621010-03-0010D	109					
Otter Creek: Harper Co.	OK720500-02-0050B	103					
Otter Creek: Logan Co.	OK620910-03-0040C	677		3	6	1	
Palo Duro Creek	OK720500-02-0500G	32					
Persimmon Creek	OK720500-01-0150G	326			6		
Pond Creek	OK621000-05-0010D	950		2	3	1	
Red Rock Creek: Lower	OK621200-05-0010K	2862			10	1	
Red Rock Creek: Upper	OK621200-05-0010M	362					
Salt Creek: Lower	OK621200-04-0010F	457		3			
Salt Creek: Upper	OK621200-04-0010P	26					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	690	1	5	1		
Salt Creek: Payne Co.	OK620900-02-0020D	276					
Salt Fork of Arkansas River	OK621010-01-0010D	1783	5	3	2		
Sand Creek	OK620920-05-0050J	111					
Sandy Creek	OK621010-02-0010D	174					
Skeleton Creek: Lower	OK620910-03-0010F	1151		16 (2 M)	5		1
Skeleton Creek: Upper	OK620910-03-0010S	2254		9 (2 M)			
Spring Creek	OK720500-02-0100D	87	2				
Stillwater Creek: Lower	OK620900-04-0040C	1863	3	8 (1 M)	11		1
Stillwater Creek: Upper	OK620900-04-0070T	1000					
Turkey Creek: Lower	OK620910-06-0010B	1484	2	6	5		1
Turkey Creek: Upper	OK620910-06-0010T	773					

SiteName	WBID	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Land Apps.	# Landfill	SiteName	WBID	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Land Apps.	# Landfill
Eagle Chief Creek: Lower	OK620920-04-0010C	1545	1	2	9	1		Turkey Creek: Woods Co.	OK621010-01-0230G	54					
Eagle Chief Creek: Upper	OK620920-04-0010G	443						Uncle John's Creek	OK620910-05-0030C	610			4		
Euchee Creek	OK620900-01-0290D	386		2 (1 M)		1		West Clay Creek	OK621010-01-0090R	39					
Gray Horse Creek	OK621200-01-0400C	163						Wolf Creek: Lower	OK720500-02-0030M	147	3		11		
Griever Creek	OK620920-01-0130G	292						Wolf Creek: Upper	OK720500-03-0010G	1200					
Indian Creek: Woodward Co.	OK720500-01-0200D	175				1		Yellowstone Creek	OK621010-01-0270C	125					

3.4 DESIGNATED USE SUPPORT ASSESSMENT

The designated uses assessed for the monitoring sites are presented below, along with the current attainment status of each use based on the 2008 Integrated Report (ODEQ 2008). The causes and potential source(s) (if known) of any impairments can be found in the Integrated Report.

Table 19. Beneficial use support assessment. F=fully supporting, N=not supporting, I=insufficient information, X=use not assessed, *=antidegradation designation.

SITENAME	WBID	AESTHETICS	AGRICULTURE	WARM WATER AQ.COMM.	HABITAT LIMITED AQ. COMM.	PRIMARY CONTACT (RECR)	SECONDARY CONTACT (RECR)	EMERGENCY WATER SUPPLY	FISH CONSUMPTION	PUBLIC/ PRIVATE WATER SUP.	SENSITIVE WATER SUPPLY	HIGH QUALITY WATER
Beaver Creek	OK620900030230_00	I	N	N		F			X	I		
Beaver Creek	OK621210000050_10	I	F	N		N			X	I		
Bent Creek	OK720500010070_00	F	N	N		N			X	I		
Bitter Creek	OK621100000100_00	I	N	N		N			X	I		
Black Bear Creek	OK621200030010_00	I	F	N		N			N	I		
Bois d' Arc Creek	OK621000030010_00	I	N	N		N			X	I		
Buffalo Creek	OK620920050010_00	F	F	F		N			X	I		
Chikaskia River	OK621100000010_00	I	F	N		N			X	I		
Chilocco Creek	OK621210000270_00	F	F	N		N			X			
Cimarron River	OK620930000010_00	F	F	F		N			F	I		
Cimarron River	OK720900000180_00	I	I	N		N			X	I		*
Clay Creek	OK621010010090_00	F	N	N		N		F	X			
Clear Creek	OK720500020070_00	I	F	F		N			I	I		
Clear Creek	OK720500020300_00	I	F	N		N			X	I		
Cooper Creek	OK620910020040_00	F	F	N		N			X	I		
Cottonwood Creek	OK620910040010_00	I	F	N		F			X	I		
Council Creek	OK620900020050_00	F	F	F		N			X	I		
Crooked Creek	OK620930000100_00	F	F	I		N			X	I		
Crooked Creek	OK621000060010_00	F	F	N		N			X	I		
Dead Indian Creek	OK620910050080_00	F	N	N		N			X	I		
Deep Creek	OK620910020250_00	I	N	F		N			X	I		
Deer Creek	OK621000040010_00	F	N	N		N			X	I		
Doga Creek	OK621200020020_00	F	F	N		N			X	I		
Driftwood Creek	OK621010030030_00	F	F	N		N			X	I		
Duck Pond Creek	OK720500020250_00	I	F	N		N			X	I		
Dugout Creek	OK620900030080_00	F	F	N		N			X	I		
Eagle Chief Creek	OK620920040010_00	F	F	F		N			X	I		
Euchee Creek	OK620900010290_00	I	F	N		N		F	X			
Gray Horse Creek	OK621200010400_00	F	F	N		N			X			
Griever Creek	OK620920010130_00	F	F	I		N			X	I		
Indian Creek	OK620910020310_00	F	F	F		N			X	I		

SITENAME	WBID	AESTHETICS	AGRICULTURE	WARM WATER AQ.COMM.	HABITAT LIMITED AQ. COMM.	PRIMARY CONTACT (RECR)	SECONDARY CONTACT (RECR)	EMERGENCY WATER SUPPLY	FISH CONSUMPTION	PUBLIC/ PRIVATE WATER SUP.	SENSITIVE WATER SUPPLY	HIGH QUALITY WATER
Indian Creek	OK720500010200_00	I	F	N		F			X	I		
Kingfisher Creek	OK620910050010_00	F	F	N		N			X			
Kiowa Creek	OK720500020130_00	I	F	I		N			I	I		
Lagoon Creek	OK620900010180_00	F	F	F		N			X			
Long Creek	OK620920020080_00	F	F	F		N			X	I		
Main Creek	OK620920010180_00	F	F	N		N			X	I		
Medicine Lodge River	OK621010030010_00	F	F	N		N			X	I		
Otter Creek	OK620910030040_00	F	F	N		N			X	I		
Otter Creek	OK720500020050_00	I	F	N		N			X	I		
Palo Duro Creek	OK720500020500_00	I	N	N		N			I	I		
Persimmon Creek	OK720500010150_00	F	F	F		N			X	I		
Pond Creek	OK621000050010_00	I	F	N		N			X	I		
Red Rock Creek	OK621200050010_00	I	N	N		N			X			
Salt Creek	OK620900020020_00	F	F	F		N			X	I		
Salt Creek	OK620910020100_00	F	N	F			F	F	I			
Salt Creek	OK621200040010_00	I	F	N		N			X	I		
Salt Fork of Arkansas R.	OK621010010010_00	I	F	N		N			X	I		
Sand Creek	OK620920050050_00	I	F	F		N			X	I		
Sandy Creek	OK621010020010_00	F	F	I		N			X	I		
Skeleton Creek	OK620910030010_00	I	N	N		N			F	I		
Spring Creek	OK720500020100_00	I	F	I		N			X			
Stillwater Creek	OK620900040040_00	I	N	F		N			X	N		
Stillwater Creek	OK620900040070_00	X	X		X	X		F	X	X		
Turkey Creek	OK620910060010_00	F	F	F		N			X	I		
Turkey Creek	OK621010010230_00	N	N	N		N			X	I		
Uncle Johns Creek	OK620910050030_00	F	F	I		N			X			
Wolf Creek	OK720500020030_00	F	F	N		F			X	X	*	
Wolf Creek	OK720500030010_00	F	F	F		N			F	I	*	
Yellowstone Creek	OK621010010270_00	F	N	F		N			X	I		

None of these streams were fully supporting for all assigned uses. Bacteria was the most ubiquitous impairment, with all but five of the streams exceeding acceptable levels for this parameter.

SUMMARY

In general, the Rotating Basin Group 2 monitoring sites have remained stable with a few exceptions. The number of sites which had improved biological communities versus declining biological communities was approximately equal, and the communities at nearly half of the sites were unchanged. Nitrogen and phosphorus concentrations were decreased at many sites, while mineral concentrations were increased. These results could be the result of different hydrologic conditions between the first cycle of monitoring and the second cycle. Most sites in the Upper Arkansas and Cimarron basins had more high flow samples in the second cycle than in the first, indicating a wetter monitoring period for those basins. During high flow, run-off events, nutrients may be flushed from the watershed, resulting in lower values of nutrients during base flow conditions. This is one possible explanation for the observed decreases in nitrogen and phosphorus in this report relative to the first report.

The increased mineral concentrations observed could be due to exceptionally dry conditions in the panhandle of the state (represented by the Upper North Canadian basin and part of the Cimarron basin). Lower flows would result in more concentrated mineral content.

4.0 LITERATURE CITED

Gallant, A. L., T. R. Whittier, D. P. Larsen, J. M. Omernik, R. M. Hughes. 1989. *Regionalization as a Tool for Managing Environmental Resources*. EPA/600/3-89/060. U. S. Environmental Protection Agency, Corvallis, OR.

Minitab, Inc. 2003. *Minitab, Release 14* for Windows.

OCC (Oklahoma Conservation Commission). 2009. Water Quality Division: *Standard Operating Procedures*. Oklahoma Conservation Commission, Oklahoma City, Oklahoma.

ODEQ (Oklahoma Department of Environmental Quality). 2008. *Water Quality in Oklahoma: 2008 Integrated Report*.

ODEQ (Oklahoma Department of Environmental Quality). 2007. *Continuing Planning Process, Chapter 3: Integrated Water Quality Report Listing Methodology*, pages 168-196.

OWRB (Oklahoma Water Resource Board). 2007. *Implementation of Oklahoma's Water Quality Standards, Chapter 46, Subchapter 15: Use Support Assessment Protocols (USAP)*. OAC 785:46-15.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross, R. M. Hughes. 1989. *Rapid Bioassessment Protocols for Use in Streams and Rivers*. USEPA/444/4-89-001. U. S. E.P.A, Assessment and Watershed Protection Division, Washington, D. C.

USGS. 1992. National Land Coverage Dataset. http://landcover.usgs.gov.

Woods, A.J., Omernik, J.M., Butler, D.R., Ford, J.G., Henley, J.E., Hoagland, B.W., Arndt, D.S., and Moran, B.C. 2005. *Ecoregions of Oklahoma* (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,250,000).

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Beaver Logan	OK620900-03-0230C	37145	30-May-07	7.20	78.8		I		19.9	173.4	7.7	13.2	5.7	0.0340	0.31	0.01	4.16	0.358	4.484	252	67.5	0.548	1.474	4722	
Beaver Logan	OK620900-03-0230C	37321	26-Jun-07	5.71	70.2	54.4	I	213	26.4	726.0	6.8	65.7	36.0	0.0106	0.39	0.01	0.64	0.415	1.044	420	256.1	0.056	0.148	61	
Beaver Logan	OK620900-03-0230C	37809	31-Jul-07	6.46	84.7	26.2	I	304	29.1	1400.0	8.1	195.4	67.1	0.0106	0.27	0.01	0.39	0.295	0.674	747	376.7	0.011	0.073	31	
Beaver Logan	OK620900-03-0230C	38256	11-Sep-07	5.86	62.8	166.0	I	117	24.4	450.4	7.8	47.9	22.2	0.0840	0.86	0.07	0.70	1.014	1.630	279	152.5	0.095	0.194	70	
Beaver Logan	OK620900-03-0230C	38406	15-Oct-07	7.66	84.2	44.0	I	280	19.8		8.1	131.3	73.0	0.0106	0.09	0.31	0.38	0.411	0.780	616	343.7	0.019	0.094	22	0.00
Beaver Logan	OK620900-03-0230C	38578	14-Nov-07	9.61	95.6	9.1	I	279	15.2	1056.0	8.3	146.0	77.3	0.0106	0.30	0.01	0.46	0.325	0.774	584	336.9	0.008	0.046	7	5.18
Beaver Logan	OK620900-03-0230C	38728	18-Dec-07	13.78	105.7	13.2	I	310	4.2	1633.0	6.3	214.0	71.2	0.0106	0.73	0.01	0.47	0.755	1.214	822	428.4	0.010	0.033	7	6.69
Beaver Logan	OK620900-03-0230C	39187	23-Jan-08		157.8	4.2	I	325	4.0			191.5	84.1	0.0106	0.38	0.01	0.26	0.405	0.654	708	369.7	0.010	0.018	7	0.00
Beaver Logan	OK620900-03-0230C	39643	04-Mar-08	11.09	91.1	498.0	I	120	6.6	413.1	7.8	48.0	27.1	0.1060	0.71	0.01	1.01	0.830	1.734	329	135.1	0.120	0.304	245	0.00
Beaver Logan	OK620900-03-0230C	39932	08-Apr-08	8.56	80.0	1000.0	I		12.3	270.8	7.9	23.3	12.6	0.1890	0.48	0.01	0.36	0.683	0.854	227	85.8	0.449	1.142	3706	
Beaver Logan	OK620900-03-0230C	40246	13-May-08	8.95	99.7	47.4	I	225	20.7	824.0	8.2	97.7	42.0	0.0106	0.46	0.01	0.22	0.485	0.694	458	322.0	0.033	0.093	38	0.00
Beaver Logan	OK620900-03-0230C	40483	17-Jun-08	7.42	89.9	152.0	I	331	25.6	717.0	8.3	79.2	37.8	0.0106	0.10	0.01	0.18	0.125	0.294	431	250.0	0.060	0.167	119	
Beaver Logan	OK620900-03-0230C	40739	09-Jul-08	6.16	78.0	59.1	I	257	27.5	1033.0	8.2														6.97
Beaver Logan	OK620900-03-0230C	40930	22-Jul-08	6.35	85.0	16.8	O	339	30.5	757.0	8.2	86.4	43.1	0.0106	0.01	0.01	0.58	0.039	0.608	432	256.0	0.016	0.071	11	6.30
Beaver Logan	OK620900-03-0230C	41221	25-Aug-08	8.87	116.0	24.3	O	253	29.5	958.0	8.3	138.1	77.7	0.0106	0.09	0.01	0.63	0.115	0.734	549	280.0	0.013	0.614	14	2.07
Beaver Logan	OK620900-03-0230C	41567	29-Sep-08	10.23	125.5	15.9	O	281	25.6	1012.0	8.3	133.5	87.8	0.0106	0.12	0.01	0.41	0.145	0.544	631	332.0	0.004	0.068	10	
Beaver Logan	OK620900-03-0230C	42009	03-Nov-08	9.51	95.3	17.7	O	292	15.6	1121.0	8.1	123.7	85.4	0.0106	0.01	0.01	0.49	0.039	0.518	621	360.0	0.018	0.051	7	0.97
Beaver Logan	OK620900-03-0230C	42297	16-Dec-08	13.91	103.0		O	327	2.0		8.3	127.9	96.1	0.0106	0.19	0.01	0.52	0.215	0.724	674	342.0	0.013	0.023	7	
Beaver Logan	OK620900-03-0230C	42777	03-Feb-09	13.91	111.8	11.5	O	355	5.8	1118.0	8.3	125.4	97.5	0.0106	0.05	0.01	0.91	0.075	0.974	623	368.0	0.019	0.032	7	1.77
Beaver Logan	OK620900-03-0230C	42984	02-Mar-09	10.75	86.1	30.7	I	365	6.3	1157.0	8.3	145.4	103.6	0.0106	0.07	0.01	0.56	0.095	0.644	684	388.0	0.029	0.107	12	
Beaver Logan	OK620900-03-0230C	43298	07-Apr-09	11.12	103.7	47.0	O	218	12.3	813.0	8.3	98.0	56.5	0.0106	0.15	0.01	1.18	0.175	1.344	467	300.0	0.028	0.152	13	
Beaver Osage	OK621210-00-0050L	37153	29-May-07	7.42	84.0	50.4	I	129	21.7	300.6	7.8	5.3	6.3	0.0106	0.13	0.06	0.44	0.201	0.630	190	148.3	0.030	0.093	29	
Beaver Osage	OK621210-00-0050L	37334	25-Jun-07	6.43	80.0	57.0		146	26.9	315.1	7.9	6.3	7.9	0.0106	0.19	0.01	0.08	0.215	0.282	219	144.7	0.043	0.114	37	
Beaver Osage	OK621210-00-0050L	37818	30-Jul-07	7.10	91.6	32.9	I	303	29.2	594.0	8.2	11.6	15.1	0.0106	0.31	0.01	0.08	0.335	0.402	287	235.9	0.004	0.055	30	0.00
Beaver Osage	OK621210-00-0050L	38266	10-Sep-07	6.69	81.4	35.5	I	159	25.1	396.1	7.0	12.8	12.9	0.0106	0.09	0.01	0.39	0.115	0.494	231	171.5	0.022	0.082	24	14.11
Beaver Osage	OK621210-00-0050L	38422	15-Oct-07	7.82	83.1	28.3	I	109	18.3	364.4	7.8	10.0	11.9	0.0106	0.06	0.05	0.08	0.121	0.188	203	176.2	0.017	0.093	42	6.60
Beaver Osage	OK621210-00-0050L	38568	13-Nov-07	9.21	89.8	14.3	O	234	14.2	523.0	7.8	8.7	13.2	0.0106	0.35	0.01	0.26	0.375	0.624	297	240.5	0.016	0.064	15	14.49
Beaver Osage	OK621210-00-0050L	38710	17-Dec-07	14.35	101.1	17.4	I	99	1.0	549.0	6.9	23.2	16.4	0.0106	0.70	0.01	0.19	0.725	0.904	271	208.5	0.018	0.045	7	
Beaver Osage	OK621210-00-0050L	39203	23-Jan-08	14.26	104.5	11.0	I	203	0.6	536.0	8.1	14.2	17.7	0.0106	0.17	0.01	0.16	0.195	0.344	299	247.0	0.008	0.022	7	12.64
Beaver Osage	OK621210-00-0050L	39661	03-Mar-08	10.59	85.7	714.0	I	91	6.3	242.5	7.7	15.9	16.6	0.0880	0.42	0.01	1.64	0.522	2.074	233	104.9	0.139	0.405	622	
Beaver Osage	OK621210-00-0050L	39935	07-Apr-08	7.08	67.7	25.3	I	159	13.7	492.5	7.6	7.1	12.1	0.0106	0.16	0.01	0.08	0.185	0.252	280	233.6	0.011	0.032	18	27.27
Beaver Osage	OK621210-00-0050L	40266	13-May-08	8.60	89.5	22.4	I	259	17.4	443.8	7.9	6.6	11.0	0.0106	0.22	0.01	0.08	0.245	0.312	281	234.8	0.014	0.038	17	
Beaver Osage	OK621210-00-0050L	40949	22-Jul-08	8.49	110.1	15.1	I	184	28.9	510.0	7.6	14.5	15.0	0.0106	0.13	0.01	0.42	0.155	0.564	299	169.0	0.006	0.044	7	
Beaver Osage	OK621210-00-0050L	41238	26-Aug-08	5.95	71.7	19.9	O	149	24.4	410.7	7.6	10.8	11.6	0.0106	0.01	0.01	0.08	0.039	0.106	224	181.0	0.007	0.057	11	
Beaver Osage	OK621210-00-0050L	41580	29-Sep-08	7.52	86.3	19.2	I	168	22.0	420.5	7.8	6.4	10.9	0.0106	0.01	0.01	0.08	0.039	0.106	242	181.0	0.004	0.053	17	0.00
Beaver Osage	OK621210-00-0050L	42023	03-Nov-08	7.19	71.0	25.1	I	177	14.0	431.5	7.6	10.1	11.4	0.0106	0.34	0.01	0.64	0.365	0.994	245	710.0	0.018	0.046	15	10.63
Beaver Osage	OK621210-00-0050L	42788	02-Feb-09	15.40	114.7	5.3	O	202	3.1	387.4	7.9	10.6	13.6	0.0106	0.33	0.03	0.17	0.371	0.530	319	315.0	0.006	0.039	7	14.87
Beaver Osage	OK621210-00-0050L	42998	02-Mar-09	10.29	104.3		O	249	5.2	500.0	8.3	8.6	12.4	0.0106	0.04	0.01	0.48	0.065	0.534	299	387.0	0.007	0.035	7	8.72
Beaver Osage	OK621210-00-0050L	43370	13-Apr-09	10.14	87.1	347.0		114	8.8	232.1	8.1	4.5	6.6	0.0290	0.08	0.01	1.44	0.123	1.534	207	189.0	0.078	0.242	286	
Bent Creek	OK720500-01-0070D	37201	04-Jun-07	7.38	82.5	32.7	I	241	20.8	2012.0	8.0	39.4	910.8	0.0530	0.52	0.01	0.68	0.587	1.214	1831	1218.2	0.177	0.215	65	37.93
Bent Creek	OK720500-01-0070D	37735	09-Jul-07	7.16	83.8	8.6	O	260	23.1	1225.0	7.9	45.3	1073.2	0.0106	0.90	0.06	0.36	0.971	1.320	2136	1462.9	0.136	0.159	23	11.27
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	6.02	68.8	5.0	I	265	21.4	1318.0	7.8														14.19
Bent Creek	OK720500-01-0070D	37993	06-Aug-07	7.65	90.9	2.4	O	241	24.0	2190.0	8.0	56.6	1108.8	0.0106	0.98	0.01	0.11	1.005	1.104	2066	1538.7	0.078	0.101	7	8.58
Bent Creek	OK720500-01-0070D	38287	17-Sep-07	7.36	82.2	2.5	O	230	20.8	1617.0	8.1	32.2	1189.1	0.0106	1.11	0.01	0.24	1.135	1.364	1839	1265.5	0.112	0.136	7	10.56
Bent Creek	OK720500-01-0070D	38441	22-Oct-07	9.13	81.3	2.0	I	256	10.2	1492.0	8.1	34.9	924.0	0.0106	0.87	0.11	0.14	0.991	1.120	1802	1274.9	0.087	0.116	7	58.52
Bent Creek	OK720500-01-0070D	38600	26-Nov-07	13.92	103.0	1.1	I	272	2.8	2338.0	8.2	68.4	1429.0	0.0106	0.74	0.17	0.08	0.921	0.988	2151	1641.7	0.057	0.087	7	12.72
Bent Creek	OK720500-01-0070D	39097	07-Jan-08	10.22	85.3	2.1		270	7.6	2449.0	8.1	44.6	1356.4	0.0180	0.56	0.01	0.15	0.592	0.724	2198	1603.8	0.041	0.067	10	11.76
Bent Creek	OK720500-01-0070D	39432	04-Feb-08	12.83	100.6	4.8	O	270	5.0	2425.0	8.1	46.4	1130.6	0.0106	0.54	0.01	0.08	0.565	0.632	2208	1522.1	0.043	0.084	10	14.48
Bent Creek	OK720500-01-0070D	39699	10-Mar-08	11.11	86.2	4.2	O	230	4.6	2540.0	8.2	46.0	1267.1	0.0106	0.45	0.01	0.08	0.475	0.542	2197	1522.6	0.046	0.056	7	11.62
Bent Creek	OK720500-01-0070D	40021	14-Apr-08	10.34	87.3	3.4	I	272	8.0	2419.0	8.0	56.6	1171.0	0.0190	0.40	0.01	0.38	0.433	0.794	2237	1677.1	0.068	0.104	7	16.08
Bent Creek	OK720500-01-0070D	40285	19-May-08	8.93	94.8	1.2	O	235	18.0	2289.0	8.0	46.4	1086.1	0.0106	0.42	0.01	0.42	0.445	0.854	2113	1508.5	0.122	0.137	7	6.61

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Bent Creek	OK720500-01-0070D	40563	24-Jun-08	6.81	78.2	20.0	I	250	22.1	2233.0	8.0	38.2	1106.8	0.0680	0.67	0.01	0.49	0.752	1.174	1987	1350.0	0.154	0.215	35	4.37
Bent Creek	OK720500-01-0070D	41019	29-Jul-08	6.36	73.3	6.2	I	217	22.3	1870.0	7.9	35.3	755.4	0.0730	0.82	0.01	0.08	0.907	0.912	1626	1055.0	0.114	0.162	7	1.15
Bent Creek	OK720500-01-0070D	41407	03-Sep-08	7.74	80.5	7.7	I	222	17.2	1640.0	7.9	24.2	658.9	0.0920	0.69	0.01	0.08	0.796	0.782	1363	128.0	0.161	0.205	7	2.27
Bent Creek	OK720500-01-0070D	41793	07-Oct-08	7.96	80.2	61.9	I	221	15.7	1490.0	7.9	41.9	854.2	0.0106	0.50	0.01	0.08	0.525	0.592	1722	1154.0	0.118	0.182	88	22.65
Bent Creek	OK720500-01-0070D	42097	18-Nov-08	11.58	96.4	1.5	I	279	7.4	1258.0	8.1	44.7	1156.1	0.0106	0.94	0.01	0.40	0.965	1.354	2153	1520.0	0.049	0.072	7	11.45
Bent Creek	OK720500-01-0070D	42374	29-Dec-08	11.64	84.9	1.9	O	286	2.5	2411.0	8.0	68.6	1182.8	0.0106	0.74	0.01	0.31	0.765	1.064	2095	1700.0	0.026	0.046	7	10.39
Bent Creek	OK720500-01-0070D	42848	10-Feb-09	10.16	86.8	3.5	I	272	8.3	1079.0	8.0	54.8	1297.7	0.0106	0.64	0.01	0.40	0.665	1.054	2139	1420.0	0.047	0.064	7	
Bent Creek	OK720500-01-0070D	43014	03-Mar-09	11.76	93.7	2.6	I	249	5.6	1050.0	8.1	48.5	1486.2	0.0106	0.48	0.01	0.25	0.505	0.744	2109	1360.0	0.080	0.101	7	9.89
Bent Creek	OK720500-01-0070D	43381	14-Apr-09	10.65	96.9	4.3	I	257	11.1	1160.0	8.0	63.0	1588.6	0.0270	0.28	0.01	0.29	0.321	0.584	2255	2010.0	0.011	0.037	7	
Bitter Creek	OK621100-00-0100G	37151	29-May-07	6.94	77.8	169.0	I	273	21.0	342.4	7.8	552.4	737.3	0.0106	0.74	0.01	1.12	0.765	1.874	2501	1535.0	0.135	0.256	234	
Bitter Creek	OK621100-00-0100G	37331	25-Jun-07	5.01	61.1	61.8	I	249	25.5	1649.0	7.9	241.4	263.9	0.0380	0.52	0.01	1.04	0.572	1.574	1091	562.8	0.146	0.272	70	14.19
Bitter Creek	OK621100-00-0100G	37816	30-Jul-07	8.12	103.3	26.3	I	314	27.8	3380.0	7.9	557.1	517.2	0.0106	0.50	0.01	0.53	0.525	1.044	2206	1267.2	0.082	0.144	34	8.24
Bitter Creek	OK621100-00-0100G	38264	10-Sep-07	5.87	69.5	69.5	I	111	23.9	2070.0	8.7	316.7	272.6	0.0300	1.23	0.01	0.88	1.274	2.124	1292	575.1	0.116	0.197	81	10.29
Bitter Creek	OK621100-00-0100G	38420	15-Oct-07	8.74	93.0	29.4	I	138	18.2	3302.0	7.7	615.8	502.0	0.0106	0.45	0.01	0.43	0.475	0.894	2135	1192.6	0.043	0.110	28	13.81
Bitter Creek	OK621100-00-0100G	38566	13-Nov-07	6.88	67.5	13.7	O	184	14.0	5000.0	7.6	654.2	758.4	0.0106	0.52	0.01	0.55	0.545	1.084	2878	1661.5	0.080	0.111	19	10.50
Bitter Creek	OK621100-00-0100G	38708	17-Dec-07	10.76	73.6	39.1	I	189	0.7	3123.0	7.5	292.5	264.6	0.1210	5.11	0.01	0.85	5.245	5.974	1229	658.4	0.121	0.154	7	16.57
Bitter Creek	OK621100-00-0100G	39201	22-Jan-08	14.22	98.7	6.6	I	272	0.5	3973.0	7.2	690.9	752.9	0.0106	1.45	0.01	0.46	1.475	1.924	2563	1550.5	0.028	0.066	7	4.86
Bitter Creek	OK621100-00-0100G	39659	03-Mar-08	9.49	80.9	29.8	I	218	8.1	3645.0	7.1	797.3	681.0	0.0970	1.54	0.01	0.76	1.651	2.314	2236	1399.3	0.074	0.109	18	
Bitter Creek	OK621100-00-0100G	39937	07-Apr-08	11.53	110.7	11.3	I	218	13.5	3934.0	7.9	900.4	933.9	0.0106	0.11	0.01	0.44	0.135	0.564	2566	1532.1	0.020	0.064	15	8.61
Bitter Creek	OK621100-00-0100G	40264	12-May-08	6.86	70.9	127.0	I	161	17.2	1616.0	7.3	237.5	268.6	0.2020	0.76	0.01	0.89	0.976	1.664	1067	638.3	0.139	0.208	99	23.62
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	4.66	59.4	19.8	O	228	27.4	4232.0	7.6														7.40
Bitter Creek	OK621100-00-0100G	41232	25-Aug-08	13.55	164.5	13.2	O	315	25.3	4162.0	7.8	772.2	994.9	0.0106	0.01	0.01	0.69	0.039	0.718	2795	686.0	0.029	0.084	25	6.95
Bitter Creek	OK621100-00-0100G	42075	18-Nov-08	10.61	88.7	7.0	O	314	7.5	3453.0	7.9	619.4	639.0	0.0106	0.53	0.01	0.58	0.555	1.124	2179	1321.0	0.084	0.125	7	11.51
Bitter Creek	OK621100-00-0100G	42362	30-Dec-08	11.10	84.8	11.7	I	203	4.1	2680.0	7.7	606.3	389.0	0.0230	1.28	0.01	0.79	1.317	2.084	1599	815.0	0.053	0.102	13	30.31
Bitter Creek	OK621100-00-0100G	42826	10-Feb-09	9.59	87.3	6.9	O	305	11.3	4162.0	7.9	946.1	911.2	0.0106	0.73	0.01	0.67	0.755	1.414	2853	1641.0	0.029	0.091	7	28.21
Bitter Creek	OK621100-00-0100G	43035	10-Mar-09	9.94	93.0	15.8	I	225	12.3	4009.0	7.8	758.9	818.2	0.0350	0.28	0.01	0.72	0.329	1.014	2826	1532.0	0.050	0.167	16	
Bitter Creek	OK621100-00-0100G	43349	14-Apr-09	9.17	80.5	283.0	I	120	9.6	1215.0	7.1	222.9	202.8	0.1070	1.62	0.01	2.20	1.741	3.834	820	440.0	0.115	0.528	263	
Bl Bear Lower	OK621200-03-0010D	37159	30-May-07	6.77	76.2	1000.0	I	68	21.5	224.8	7.3	14.5	10.6	0.0106	0.30	0.01	1.51	0.325	1.824	184	87.3	0.199	0.379	618	
Bl Bear Lower	OK621200-03-0010D	37340	26-Jun-07	6.52	81.0	128.0	I	112	26.4	384.8	7.6	39.3	16.2	0.0106	0.35	0.01	0.18	0.375	0.544	262	130.0	0.169	0.254	93	
Bl Bear Lower	OK621200-03-0010D	37986	06-Aug-07	7.62	94.4	21.4	I	268	31.0	1182.0	8.8	163.8	44.0	0.0106	0.01	0.01	0.59	0.039	0.618	656	336.4	0.034	0.127	19	45.29
Bl Bear Lower	OK621200-03-0010D	38272	11-Sep-07	6.11	71.0	1000.0	I	68	23.0		7.0	17.3	10.4	0.0160	0.62	0.01	2.06	0.650	2.694	195	64.6	0.456	1.009	3040	
Bl Bear Lower	OK621200-03-0010D	38428	16-Oct-07	7.08	75.4	27.2	I	228	18.4	711.0		77.0	27.8	0.0106	0.11	0.30	0.21	0.421	0.620	320	245.1	0.068	0.119	25	31.43
Bl Bear Lower	OK621200-03-0010D	38558	14-Nov-07	9.83	96.4	12.8	O	256	14.8	845.0		92.0	37.0	0.0106	0.51	0.18	0.53	0.701	1.220	487	278.2	0.099	0.142	7	42.93
Bl Bear Lower	OK621200-03-0010D	38716	18-Dec-07	13.60	99.6	32.1	I	221	2.5	897.0	8.3	112.2	35.1	0.0250	0.57	0.01	0.46	0.609	1.044	517	260.0	0.091	0.129	7	122.91
Bl Bear Lower	OK621200-03-0010D	39193	23-Jan-08	16.20	115.6	5.7	O	208	0.3	1050.0	8.3	163.0	61.6	0.0106	0.20	0.01	0.48	0.225	0.694	600	322.4	0.017	0.072	7	70.22
Bl Bear Lower	OK621200-03-0010D	39651	04-Mar-08	10.28	84.1	635.0	I	90	6.8	289.0	7.5	26.4	18.9	0.1100	0.55	0.01	1.34	0.674	1.904	282	98.5	0.223	0.507	1045	
Bl Bear Lower	OK621200-03-0010D	39946	08-Apr-08	8.87	84.7	737.0	I	99	13.3	258.7	7.5	18.1	15.5	0.0620	0.31	0.01	1.55	0.386	1.874	177	105.0	0.174	0.772	2184	
Bl Bear Lower	OK621200-03-0010D	40272	13-May-08	7.96	85.2	266.0	I	129	18.6	421.2	7.8	40.8	20.4	0.0106	0.44	0.01	0.08	0.465	0.532	294	153.1	0.156	0.227	224	
Bl Bear Lower	OK621200-03-0010D	40496	17-Jun-08	6.54	75.1	807.0	I	87	22.3	208.0	7.4	12.3	7.1	0.0106	0.20	0.01	0.90	0.225	1.114	184	71.0	0.236	0.607	1240	
Bl Bear Lower	OK621200-03-0010D	40954	22-Jul-08	7.04	92.4	73.2	I	143	29.6	507.0	7.9	56.8	19.9	0.0106	0.43	0.01	0.72	0.455	1.164	332	151.0	0.172	0.247	42	163.85
Bl Bear Lower	OK621200-03-0010D	41243	26-Aug-08	8.38	107.4	25.2	I	330	28.2	1274.0	8.3	198.3	49.6	0.0106	0.01	0.01	0.38	0.039	0.408	711	346.0	0.033	0.107	27	25.42
Bl Bear Lower	OK621200-03-0010D	40745	28-Aug-08	6.97	87.0	24.5	O	330	26.6	1314.0	8.4														22.63
Bl Bear Lower	OK621200-03-0010D	41575	29-Sep-08	7.38	84.0	19.6	I	160	21.7	543.0	8.0	50.9	25.8	0.0106	0.87	0.01	0.39	0.895	1.274	299	156.0	0.024	0.099	16	34.43
Bl Bear Lower	OK621200-03-0010D	42028	03-Nov-08	15.30	157.4	1.6	O	244	16.7	886.0	8.4	112.3	37.6	0.0106	0.14	0.01	1.05	0.165	1.204	491	270.0	0.064	0.174	14	27.00
Bl Bear Lower	OK621200-03-0010D	42298	15-Dec-08	11.48	89.3	13.6	O	317	4.7	778.0	8.0	186.6	49.2	0.0106	0.01	0.01	0.70	0.039	0.728	696	409.0	0.023	0.063	7	20.90
Bl Bear Lower	OK621200-03-0010D	42783	02-Feb-09	12.90	100.9	12.0	O	357	5.0	871.0	8.2	315.4	66.5	0.0106	0.01	0.01	0.49	0.039	0.518	758	394.0	0.031	0.087	7	27.18
Bl Bear Lower	OK621200-03-0010D	43003	02-Mar-09	14.02	116.0	21.9	O	256	7.2	825.0	8.4	109.4	37.4	0.0106	0.01	0.01	0.98	0.039	1.008	460	280.0	0.015	0.130	21	25.52
Bl Bear Lower	OK621200-03-0010D	43365	14-Apr-09	9.57	90.5	294.0	I	130	12.8	277.2	8.0	25.9	15.4	0.0580	0.22	0.01	1.59	0.292	1.824	261	148.0	0.074	0.243	202	
Bl Bear Middle	OK621200-03-0010M	37138	29-May-07	6.97	78.8	358.0	I	76	21.4	265.4	7.7	28.4	13.7	0.0540	0.35	0.01	1.60	0.418	1.964	272	99.1	0.240	0.413	290	
Bl Bear Middle	OK621200-03-0010M	37327	26-Jun-07	6.46	78.8	578.0	I	103	25.3	407.6	7.6	44.8	15.1	0.0106	0.34	0.01	2.09	0.365	2.444	261	119.2	0.258	0.602	1182	
Bl Bear Middle	OK621200-03-0010M	37804	30-Jul-07	8.69	113.5	47.8	I	230	29.7	923.0	8.3	115.9	44.2	0.0106	0.32	0.01	0.55	0.345	0.884	226	267.7	0.076	0.175	44	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Bl Bear Middle	OK621200-03-0010M	38252	10-Sep-07	6.23	73.0		I		23.6	191.6	7.3	14.9	6.4	0.0106	0.67	0.06	1.84	0.741	2.570	228	62.3	0.300	0.858	2404	
Bl Bear Middle	OK621200-03-0010M	38413	16-Oct-07	8.91	93.4	17.2	I	300	17.6		8.2	217.3	47.5	0.0106	0.27	0.47	0.34	0.751	1.080	778	371.5	0.100	0.136	16	
Bl Bear Middle	OK621200-03-0010M	38574	13-Nov-07	8.86	89.9	20.6	I	328	15.9	1325.0	8.1	176.5	46.6	0.0106	0.71	0.01	0.55	0.735	1.274	729	365.4	0.129	0.172	13	
Bl Bear Middle	OK621200-03-0010M	38722	17-Dec-07	13.76	97.9	37.6	I	259	1.4		8.2	128.5	52.5	0.0106	0.70	0.01	0.26	0.725	0.974	567	280.5	0.085	0.137	15	90.84
Bl Bear Middle	OK621200-03-0010M	39181	22-Jan-08	15.45	10.8	9.4	O	309	0.7		8.3	232.5	82.8	0.0106	0.69	0.01	0.50	0.715	1.204	782	386.6	0.057	0.103	16	36.75
Bl Bear Middle	OK621200-03-0010M	39639	03-Mar-08	10.40	88.0	772.0	I	101	8.0		8.0	54.9	28.9	0.1360	0.65	0.01	1.78	0.800	2.444	260	118.0	0.286	0.747	1162	
Bl Bear Middle	OK621200-03-0010M	39928	07-Apr-08	8.84	87.4	187.0	I	117	14.9	471.6	7.9	50.2	22.5	0.0470	0.50	0.01	0.83	0.561	1.344	302	138.4	0.150	0.222	147	
Bl Bear Middle	OK621200-03-0010M	40240	12-May-08	7.02	73.8	248.0	I	91	17.8	430.0	7.8	46.3	20.8	0.0106	0.49	0.01	0.11	0.515	0.614	295	149.8	0.146	0.292	310	
Bl Bear Middle	OK621200-03-0010M	40478	16-Jun-08	6.06	73.0	425.0	I	90	25.1	303.1	7.8	30.9	13.5	0.0106	0.29	0.01	0.62	0.315	0.924	248	96.0	0.317	0.562	947	
Bl Bear Middle	OK621200-03-0010M	40926	21-Jul-08	7.59	99.1	158.0	I	148	29.1	557.0	7.9	80.9	21.3	0.0106	0.64	0.01	0.71	0.665	1.364	370	160.0	0.181	0.369	100	
Bl Bear Middle	OK621200-03-0010M	41226	26-Aug-08	7.89	96.3	44.7	I	318	25.5	1859.0		371.3	59.8	0.0106	0.06	0.01	0.70	0.085	0.774	1023	420.0	0.035	0.112	38	
Bl Bear Middle	OK621200-03-0010M	40747	05-Sep-08	7.24	82.7	37.2	I	310	22.0	1657.0	7.7														14.20
Bl Bear Middle	OK621200-03-0010M	41572	30-Sep-08	8.47	94.5	22.8	O	290	20.9	1220.0	8.2	176.1	45.3	0.0106	0.25	0.01	0.08	0.275	0.342	669	310.0	0.067	0.224	18	14.50
Bl Bear Middle	OK621200-03-0010M	42016	04-Nov-08	7.54	74.1	20.4	O	318	15.4	1453.0	8.0	232.9	47.6	0.0106	0.51	0.01	0.63	0.535	1.154	782	432.0	0.123	0.162	14	14.51
Bl Bear Middle	OK621200-03-0010M	42290	15-Dec-08	12.79	95.0		O	342	2.8	1047.0	8.3	311.0	78.5	0.0106	0.28	0.01	0.60	0.305	0.894	970	398.0	0.016	0.135	7	
Bl Bear Middle	OK621200-03-0010M	42771	02-Feb-09	12.53	92.4	6.0	O	363	2.6	1863.0		447.2	98.6	0.0106	0.51	0.09	0.66	0.611	1.260	995	444.0	0.039	0.093	7	17.34
Bl Bear Middle	OK621200-03-0010M	42990	03-Mar-09	13.89	110.7	8.0	O	321	5.7	1600.0	8.6	340.9	78.6	0.0106	0.17	0.01	0.48	0.195	0.664	884	436.0	0.037	0.074	7	11.42
Bl Bear Middle	OK621200-03-0010M	43294	06-Apr-09	9.97	86.3	57.2	I	221	9.0	939.0	8.4	148.4	45.9	0.0380	0.45	0.01	0.56	0.502	1.024	532	350.0	0.074	0.128	17	
Bl Bear Upper	OK621200-03-0010W	37139	29-May-07	7.36	84.3	246.0	I	88	21.5	317.1	7.6	20.3	10.9	0.0106	0.30	0.01	1.52	0.325	1.834	255	83.7	0.251	0.499	578	
Bl Bear Upper	OK621200-03-0010W	37326	26-Jun-07	7.09	85.6	380.0	I	119	24.7	515.0	7.2	69.0	18.0	0.0106	0.49	0.01	1.48	0.515	1.984	356	140.2	0.271	0.489	383	
Bl Bear Upper	OK621200-03-0010W	37802	30-Jul-07	7.51	96.5	26.3	I	265	28.2	1282.0	8.2	201.3	47.7	0.0106	0.62	0.01	0.48	0.645	1.114	680	338.9	0.145	0.205	21	38.26
Bl Bear Upper	OK621200-03-0010W	38249	10-Sep-07	6.63	75.1		I		22.1	158.8	7.2	16.0	5.3	0.0720	0.87	0.07	4.04	1.012	4.980	314	49.7	0.762	2.162	6932	
Bl Bear Upper	OK621200-03-0010W	38410	16-Oct-07	7.68		42.8	I	299	16.8		8.1	341.6	54.2	0.0106	1.50	0.54	0.48	2.051	2.520	959	426.1	0.303	0.360	34	10.05
Bl Bear Upper	OK621200-03-0010W	38573	13-Nov-07	9.37	93.5	19.3	I	314	15.3	1566.0	8.2	265.6	50.2	0.0106	0.88	0.01	0.49	0.905	1.384	865	397.7	0.173	0.217	11	21.34
Bl Bear Upper	OK621200-03-0010W	38725	17-Dec-07	14.92	108.8	14.4	I	271	2.4	1542.0	8.4	219.2	68.5	0.0106	0.87	0.01	0.08	0.895	0.962	731	347.0	0.099	0.145	7	36.38
Bl Bear Upper	OK621200-03-0010W	39178	22-Jan-08	14.82	101.7	6.0	I	313	0.1		8.0	301.6	74.5	0.0106	0.97	0.01	0.56	0.995	1.544	933	426.0	0.088	0.139	37	
Bl Bear Upper	OK621200-03-0010W	39636	03-Mar-08	10.65	91.5	371.0	I		8.7	572.0	8.1	72.8	37.7	0.0680	0.70	0.01	1.24	0.782	1.954	384	179.0	0.162	0.368	397	
Bl Bear Upper	OK621200-03-0010W	39925	07-Apr-08	9.65	95.4	177.0	I	138	14.8	769.0	8.2	132.6	39.1	0.0160	0.68	0.01	1.03	0.710	1.724	427	186.4	0.205	0.297	81	122.24
Bl Bear Upper	OK621200-03-0010W	40243	12-May-08	7.60	81.0	130.0	I	116	18.4	517.0	7.9	68.9	23.3	0.0106	0.63	0.01	0.20	0.655	0.844	331	171.3	0.119	0.214	73	
Bl Bear Upper	OK621200-03-0010W	40481	16-Jun-08	9.00	108.5	175.0	I	89	24.6	346.3	7.9	42.3	13.5	0.0106	0.29	0.01	0.08	0.315	0.382	26	94.0	0.295	0.410	231	
Bl Bear Upper	OK621200-03-0010W	40923	21-Jul-08	7.94	90.4	82.7	I	149	28.0	599.0	7.9	111.1	30.7	0.0106	0.76	0.01	0.31	0.785	1.084	368	156.0	0.254	0.303	39	
Bl Bear Upper	OK621200-03-0010W	41227	26-Aug-08	12.36	153.6	14.7	O	306	26.9	2158.0		497.2	58.4	0.0106	0.38	0.01	0.58	0.405	0.974	1210	485.0	0.138	0.200	18	
Bl Bear Upper	OK621200-03-0010W	41269	28-Aug-08	5.82	72.1																				
Bl Bear Upper	OK621200-03-0010W	41569	30-Sep-08	7.44	81.5	10.6	O	292	19.6	1677.0	8.1	302.2	43.4	0.0106	0.73	0.01	0.44	0.755	1.184	920	406.0	0.127	0.208	12	6.73
Bl Bear Upper	OK621200-03-0010W	42013	04-Nov-08	7.09	68.9	16.0	I	312	14.2	1752.0	7.9	319.5	71.5	0.0106	1.53	0.01	0.58	1.555	2.124	931	446.0	0.196	0.219	14	17.35
Bl Bear Upper	OK621200-03-0010W	42287	15-Dec-08	12.39	99.2	4.9	O	363	5.2	1226.0	8.2	424.6	67.8	0.0106	0.76	0.01	0.39	0.785	1.164	1123	568.0	0.134	0.140	7	8.74
Bl Bear Upper	OK621200-03-0010W	42768	02-Feb-09	13.23	93.7	6.0	O	341	1.4			516.8	98.5	0.0106	1.15	0.10	0.51	1.261	1.760	1092	554.0	0.065	0.082	7	9.39
Bl Bear Upper	OK621200-03-0010W	42993	03-Mar-09	15.64	128.0	6.0	O	330	6.9	1965.0	8.3	442.5	98.5	0.0106	0.54	0.01	0.41	0.565	0.964	1086	496.0	0.093	0.141	7	10.31
Bl Bear Upper	OK621200-03-0010W	43291	06-Apr-09	9.52	80.5	32.7	I	261	8.2	1438.0	8.4	284.1	76.2	0.0520	0.61	0.01	0.94	0.676	1.564	786	374.0	0.102	0.195	10	
Bois d'Arc Creek	OK621000-03-0010C	37147	29-May-07	7.13	78.6	60.2	I	189	20.1	1138.0	8.1	82.6	234.5	0.0106	0.76	0.01	0.78	0.785	1.554	829	520.4	0.115	0.199	102	
Bois d'Arc Creek	OK621000-03-0010C	37328	25-Jun-07	6.93	86.0	28.2	I	292	26.3	1402.0	8.0	108.0	254.6	0.0106	0.95	0.01	0.69	0.975	1.654	926	557.0	0.097	0.155	22	0.00
Bois d'Arc Creek	OK621000-03-0010C	37812	30-Jul-07	6.30	79.4	20.4	I	321	27.1	1588.0	7.8	129.0	343.3	0.0106	0.39	0.01	0.26	0.415	0.664	1064	616.6	0.029	0.070	22	18.55
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	5.54	66.6	40.7	I	250	24.5	1646.0	7.1														5.43
Bois d'Arc Creek	OK621000-03-0010C	38260	10-Sep-07	6.20	73.1	38.5	I	215	23.8	1327.0	7.9	100.2	240.9	0.0410	1.26	0.01	0.59	1.315	1.864	861	516.1	0.099	0.134	43	20.56
Bois d'Arc Creek	OK621000-03-0010C	38416	15-Oct-07	6.47	69.1	41.6	I	183	18.6	1327.0	7.6	123.6	282.6	0.0106	0.95	0.31	0.40	1.271	1.660	948	556.6	0.089	0.132	63	18.88
Bois d'Arc Creek	OK621000-03-0010C	38562	13-Nov-07	6.75	56.9	20.7	O	248	14.3	1552.0	7.7	124.0	264.9	0.0106	0.78	0.21	0.35	1.001	1.340	1030	621.3	0.063	0.099	25	13.35
Bois d'Arc Creek	OK621000-03-0010C	38704	17-Dec-07	12.62	86.5	61.3	I	191	0.0	1410.0	7.8	100.4	323.6	0.0106	1.81	0.01	0.19	1.835	2.014	874	558.8	0.047	0.085	7	22.49
Bois d'Arc Creek	OK621000-03-0010C	39197	22-Jan-08	13.97	95.0	7.0	I	203	0.1	1943.0	7.3	116.7	295.7	0.0106	1.49	0.01	0.36	1.515	1.864	964	545.7	0.038	0.053	7	9.25
Bois d'Arc Creek	OK621000-03-0010C	39655	03-Mar-08	9.26	80.0	77.7	I	311	9.0	1549.0	7.3	105.3	331.4	0.0480	1.69	0.01	0.52	1.752	2.224	1028	626.6	0.082	0.149	101	31.64
Bois d'Arc Creek	OK621000-03-0010C	39941	07-Apr-08	12.09	119.2	27.2	I	193	14.8	1401.0	8.2	130.8	339.9	0.0106	0.69	0.01	0.57	0.715	1.274	908	566.9	0.042	0.089	33	26.92
Bois d'Arc Creek	OK621000-03-0010C	40260	12-May-08	7.98	80.6	115.0	I	184	15.9	790.0	7.8	63.3	114.4	0.0640	0.98	0.01	0.30	1.058	1.294	543	309.3	0.160	0.226	99	23.68

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Bois d'Arc Creek	OK621000-03-0010C	41228	25-Aug-08	5.69	68.6	41.2	I	231	24.6	1379.0	7.6	132.6	260.4	0.0470	0.82	0.01	0.60	0.881	1.434	905	421.0	0.075	0.112	35	12.90
Bois d'Arc Creek	OK621000-03-0010C	42073	18-Nov-08	10.34	84.9	11.9	O	302	6.8	1560.0	8.1	127.6	333.3	0.0106	0.48	0.01	0.47	0.505	0.964	1058	694.0	0.087	0.117	7	5.90
Bois d'Arc Creek	OK621000-03-0010C	42360	30-Dec-08	11.39	85.8	13.1	I	245	3.5	1429.0	8.1	130.9	337.6	0.0106	1.19	0.01	0.69	1.215	1.894	949	630.0	0.048	0.094	7	15.53
Bois d'Arc Creek	OK621000-03-0010C	42824	10-Feb-09	8.19	73.4	23.5	I	275	10.4	1529.0	7.7	155.5	559.5	0.0106	0.35	0.01	0.65	0.375	1.014	1088	625.0	0.030	0.099	23	18.68
Bois d'Arc Creek	OK621000-03-0010C	43033	10-Mar-09	7.87	76.1	31.2	I	245	14.0	1480.0	8.0	128.5	423.4	0.0240	0.22	0.01	0.75	0.258	0.984	1057	671.0	0.027	0.131	35	11.14
Bois d'Arc Creek	OK621000-03-0010C	43347	14-Apr-09	10.15	87.8	443.0	I	83	9.0	340.0	7.6	18.5	60.7	0.2490	2.10	0.04	1.65	2.389	3.790	274	250.0	0.204	0.581	323	
Buffalo Lower	OK620920-05-0010G	37208	05-Jun-07	7.43	86.8	5.2	I	208	23.2	2632.0	8.0	136.3	991.7	0.0106	0.01	0.01	0.71	0.039	0.738	2266	1354.6	0.010	0.047	7	13.78
Buffalo Lower	OK620920-05-0010G	37178	13-Jun-07	9.34	120.8	2.6	I	193	28.7	2919.0	8.1														11.32
Buffalo Lower	OK620920-05-0010G	37744	10-Jul-07	6.85	81.7	3.9	I	185	24.2	2667.0	7.9	178.2	1321.5	0.0106	0.09	0.01	0.46	0.115	0.564	2778	1692.2	0.020	0.043	16	17.09
Buffalo Lower	OK620920-05-0010G	38000	07-Aug-07	6.92	84.2	3.8	O	145	25.3	3172.0	7.7	196.0	1577.4	0.0106	0.01	0.01	0.43	0.039	0.458	2972	1953.3	0.007	0.033	7	3.17
Buffalo Lower	OK620920-05-0010G	38294	18-Sep-07	6.63	75.0	1.8	I	116	21.5	3169.0	7.7	286.6	2180.7	0.0220	0.07	0.01	0.43	0.106	0.514	3052	2019.4	0.009	0.026	13	3.01
Buffalo Lower	OK620920-05-0010G	38448	23-Oct-07	9.33	79.0	1.1	O	150	8.1	2638.0	8.0	191.5	1965.4	0.0106	0.23	0.44	0.20	0.681	0.870	3191	2052.6	0.012	0.017	7	4.58
Buffalo Lower	OK620920-05-0010G	38607	27-Nov-07	14.34	103.4	1.7	I	174	1.9	3423.0	8.1	202.2	1777.8	0.0106	0.78	0.01	0.19	0.805	0.984	3127	2233.1	0.006	0.027	7	2.66
Buffalo Lower	OK620920-05-0010G	39104	08-Jan-08	11.23	88.7	4.7	O	194	5.4	2790.0	7.9	189.5	1504.0	0.0106	0.59	0.01	0.40	0.615	1.004	2606	1678.5	0.006	0.026	7	8.47
Buffalo Lower	OK620920-05-0010G	39439	05-Feb-08	11.10	88.6	4.5	I	183	5.7	2471.0	8.0	190.1	1349.9	0.0106	0.61	0.01	0.36	0.635	0.984	2643	1542.6	0.006	0.019	13	9.05
Buffalo Lower	OK620920-05-0010G	39706	11-Mar-08	9.55	78.2	5.3	O	183	6.7	3088.0	8.1	183.2	1618.4	0.0106	0.35	0.01	0.29	0.375	0.654	2654	1726.1	0.007	0.017	7	10.32
Buffalo Lower	OK620920-05-0010G	40028	15-Apr-08	9.32	86.8	3.1	O	158	12.1	2914.0	8.0	198.2	1373.4	0.0106	0.05	0.01	0.35	0.075	0.414	2783	1779.3	0.006	0.007	7	9.43
Buffalo Lower	OK620920-05-0010G	40312	20-May-08	8.48	100.3	7.6	I	140	23.8	3000.0	8.0	270.7	1525.4	0.0106	0.01	0.01	0.67	0.039	0.698	2861	2384.7	0.007	0.025	7	4.18
Buffalo Lower	OK620920-05-0010G	40558	23-Jun-08	7.93	76.2	291.0	I	38	13.5	1036.0	7.6	56.0	545.5	0.2410	0.30	0.01	1.91	0.555	2.224	780	564.0	0.220	0.419	261	
Buffalo Lower	OK620920-05-0010G	41010	28-Jul-08	8.14	106.2	3.8	I	151	29.2	2730.0	7.9	274.6	1617.9	0.0106	0.01	0.01	0.28	0.039	0.308	2935	1555.0	0.007	0.029	7	2.67
Buffalo Lower	OK620920-05-0010G	41399	02-Sep-08	8.81	105.2	1.2	O	100	24.3	2838.0	7.9	308.5	1905.4	0.0106	0.01	0.01	0.27	0.039	0.298	3404	2170.0	0.009	0.023	7	2.47
Buffalo Lower	OK620920-05-0010G	41786	06-Oct-08	9.31	102.8	4.5	O	123	20.1	2105.0	8.0	240.4	1676.3	0.0106	0.13	0.01	0.08	0.155	0.222	2894	1760.0	0.008	0.032	7	4.72
Buffalo Lower	OK620920-05-0010G	42090	17-Nov-08	12.47	108.8	1.2	I	212	9.5	1500.0	8.2	236.1	1378.4	0.0106	0.01	0.01	0.49	0.039	0.518	2625	1680.0	0.004	0.014	7	7.83
Buffalo Lower	OK620920-05-0010G	42311	15-Dec-08	15.55	107.3	2.6	O	210	0.4	3155.0	8.1	230.0	1746.4	0.0106	0.28	0.01	0.48	0.305	0.774	2725	1785.0	0.004	0.004	7	7.50
Buffalo Lower	OK620920-05-0010G	42841	09-Feb-09	12.49	118.2	5.2	I	212	13.1	1326.0	8.2	169.0	1547.6	0.0106	0.35	0.01	0.54	0.375	0.904	2511	1520.0	0.006	0.041	7	
Buffalo Lower	OK620920-05-0010G	43007	02-Mar-09	13.41	108.2	6.3	I	195	6.2	1222.0	8.2	213.5	1962.7	0.0150	0.17	0.01	0.40	0.199	0.584	2643	1800.0	0.010	0.053	7	7.97
Buffalo Lower	OK620920-05-0010G	43374	13-Apr-09	9.82	90.5	14.7	I	215	11.7	1438.0	8.1	202.3	1923.4	0.0106	0.01	0.01	0.08	0.039	0.106	2611	1910.0	0.010	0.014	15	
Buffalo Upper	OK620920-05-0010P	37207	05-Jun-07	6.13	70.0	1.7	I	262	21.6	2417.0	7.9	157.7	885.2	0.0106	0.16	0.01	0.70	0.185	0.874	2034	1250.6	0.007	0.037	7	7.87
Buffalo Upper	OK620920-05-0010P	37177	13-Jun-07	8.91	106.3	1.5	O	231	24.3	2734.0	7.9														5.96
Buffalo Upper	OK620920-05-0010P	37743	10-Jul-07	6.79	78.4	4.1	O	228	22.5	2723.0	7.8	171.4	1128.6	0.0310	0.40	0.01	0.65	0.445	1.064	2358	1454.5	0.017	0.046	7	2.30
Buffalo Upper	OK620920-05-0010P	37999	07-Aug-07	4.84	57.3	3.2	O	215	23.9	2393.0	7.6	167.2	1520.5	0.2430	0.14	0.01	0.75	0.397	0.904	2735	1761.9	0.022	0.061	7	1.89
Buffalo Upper	OK620920-05-0010P	38293	18-Sep-07	4.86	55.7	1.8	I	163	21.0	2919.0	7.5	232.8	1795.5	0.1270	0.23	0.10	0.70	0.457	1.030	2626	1652.8	0.015	0.031	7	0.57
Buffalo Upper	OK620920-05-0010P	38447	23-Oct-07	9.11	74.8	1.3	O	150	6.8	2913.0	7.8	152.7	1648.7	0.0220	0.70	0.38	0.36	1.102	1.440	2741	1798.5	0.006	0.024	7	1.13
Buffalo Upper	OK620920-05-0010P	38606	27-Nov-07	11.96	82.9	17.8	O	234	0.4		8.0	198.3	1482.4	0.0106	0.85	0.01	0.56	0.875	1.424	2467	1684.0	0.016	0.052	26	2.95
Buffalo Upper	OK620920-05-0010P	39103	07-Jan-08	15.18	132.3	7.4	O	240	9.2	2291.0	8.4	181.5	1266.5	0.0106	0.64	0.01	0.46	0.665	1.114	2058	1364.5	0.008	0.041	16	6.38
Buffalo Upper	OK620920-05-0010P	39438	04-Feb-08	14.32	127.9	5.3	I	243	10.3	2564.0	8.3	183.2	1157.9	0.0106	0.68	0.01	0.45	0.705	1.144	2035	1379.3	0.007	0.024	13	9.79
Buffalo Upper	OK620920-05-0010P	39705	10-Mar-08	14.40	136.3	7.9	O	230	13.4	2600.0	8.4	173.1	113.1	0.0106	0.48	0.01	0.29	0.505	0.784	2033	1401.8	0.010	0.023	11	10.66
Buffalo Upper	OK620920-05-0010P	40027	14-Apr-08	13.55	146.5	3.9	O	2	19.0	709.0	8.5	187.4	1050.6	0.0106	0.13	0.01	0.77	0.155	0.914	2166	1366.7	0.004	0.025	7	12.42
Buffalo Upper	OK620920-05-0010P	40313	20-May-08	10.04	120.3	1.4	O	202	24.5	2457.0	8.1	254.1	1064.6	0.0106	0.01	0.01	0.74	0.039	0.768	2196	1580.4	0.006	0.020	7	2.25
Buffalo Upper	OK620920-05-0010P	40559	23-Jun-08	7.39	74.5	1000.0	I	75	15.8	745.0	7.7	34.8	290.8	0.2280	0.64	0.01	2.55	0.882	3.204	542	320.0	0.577	0.985	631	20.66
Buffalo Upper	OK620920-05-0010P	41011	28-Jul-08	15.07	200.0	13.5	O	213	30.5	2661.0	8.2	233.5	1501.3	0.0106	0.01	0.01	0.34	0.039	0.368	2791	1965.0	0.015	0.042	7	0.44
Buffalo Upper	OK620920-05-0010P	41400	02-Sep-08	11.22	133.2	1.2	O	109	23.9	2593.0	8.1	196.1	1578.3	0.0106	0.01	0.01	0.08	0.039	0.106	2896	1880.0	0.010	0.027	7	0.28
Buffalo Upper	OK620920-05-0010P	41787	06-Oct-08	10.01	111.1	1.9	I	157	20.4	1947.0	7.9	164.4	1376.0	0.0106	0.01	0.01	0.08	0.039	0.106	2362	1510.0	0.010	0.028	7	1.91
Buffalo Upper	OK620920-05-0010P	42091	17-Nov-08	13.16	114.5	0.9	O	245	9.2	1445.0	8.2	221.0	974.0	0.0106	0.19	0.01	0.56	0.215	0.764	2171	1330.0	0.006	0.014	7	3.95
Buffalo Upper	OK620920-05-0010P	42312	15-Dec-08	14.70	100.7	3.7	O	270	0.1	2730.0	8.1	217.3	1045.4	0.0106	0.21	0.01	0.49	0.235	0.714	2163	2347.0	0.004	0.004	7	5.83
Buffalo Upper	OK620920-05-0010P	42842	09-Feb-09	12.54	116.9	2.4	I	233	12.2	1267.0	8.1	167.8	1311.7	0.0106	0.39	0.01	0.55	0.415	0.954	2210	1360.0	0.004	0.030	7	
Buffalo Upper	OK620920-05-0010P	43008	02-Mar-09	13.42	109.1	1.7	O	242	6.4	1195.0	8.1	201.6	1530.5	0.0106	0.27	0.01	0.47	0.295	0.754	2132	1290.0	0.007	0.048	7	4.35
Buffalo Upper	OK620920-05-0010P	43375	13-Apr-09	13.74	131.1	5.2	I	258	13.2	1442.0	8.2	217.1	1671.4	0.0106	0.01	0.01	0.37	0.039	0.398	2137	1410.0	0.008	0.013	7	
Chickaskia Lower	OK621100-00-0010B	37148	29-May-07	6.35	71.3	489.1	I	118	21.1	429.5	7.8	38.7	67.3	0.0106	0.78	0.01	1.14	0.805	1.934	306	163.2	0.333	0.545	556	
Chickaskia Lower	OK621100-00-0010B	37329	25-Jun-07	5.57	68.7	166.0	I	124	26.1	685.0	7.9	55.9	73.8	0.0106	0.87	0.01	0.97	0.895	1.854	409	251.4	0.283	0.479	242	
Chickaskia Lower	OK621100-00-0010B	37813	30-Jul-07	2.77	34.6	54.2	I	114	28.2	1046.0	7.7	109.8	118.6	0.0106	0.24	0.01	0.70	0.265	0.954	610	358.1	0.030	0.145	65	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissSolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Chickaskia Lower	OK621100-00-0010B	38261	10-Sep-07	6.07	73.3	62.2	I	199	24.9	1188.0	7.7	151.7	141.8	0.0106	0.45	0.01	0.61	0.475	1.074	686	395.6	0.059	0.140	49	
Chickaskia Lower	OK621100-00-0010B	38417	15-Oct-07	5.55	59.4	39.6	I	187	18.5	1246.0	7.9	195.8	154.4	0.0106	0.09	0.41	0.67	0.511	1.170	790	436.2	0.014	0.133	46	31.66
Chickaskia Lower	OK621100-00-0010B	38563	13-Nov-07	7.85	77.2	10.8	O	208	14.8	1284.0	6.3	187.5	131.1	0.0106	0.79	0.01	0.38	0.815	1.184	759	453.2	0.054	0.093	12	30.16
Chickaskia Lower	OK621100-00-0010B	38705	17-Dec-07	7.19	72.6	76.1	I	192	0.2	963.0	7.3	107.7	123.3	0.0106	2.47	0.01	1.24	2.495	3.724	498	291.6	0.261	0.512	341	
Chickaskia Lower	OK621100-00-0010B	39198	22-Jan-08	14.43	98.8	11.3	O	245	0.0	1383.0	7.0	177.2	154.8	0.0260	1.83	0.01	0.43	1.870	2.274	801	455.3	0.038	0.087	16	
Chickaskia Lower	OK621100-00-0010B	39656	03-Mar-08	9.53	81.3	69.5	I	181	8.4	1140.0	7.3	127.6	164.4	0.0720	2.27	0.01	0.86	2.356	3.144	675	403.4	0.127	0.181	84	
Chickaskia Lower	OK621100-00-0010B	39940	07-Apr-08	12.09	120.7	24.9	I	221	15.3	1157.0	8.5	222.0	173.1	0.0106	0.56	0.01	0.70	0.585	1.274	686	408.1	0.034	0.112	28	
Chickaskia Lower	OK621100-00-0010B	40261	12-May-08	7.26	76.0	256.0	I	167	17.9	565.0	7.9	45.6	68.9	0.0106	0.79	0.01	0.08	0.815	0.882	387	197.9	0.194	0.294	341	
Chickaskia Lower	OK621100-00-0010B	41229	25-Aug-08	6.32	77.1	53.2	I	221	25.4	1180.0	7.5	158.5	120.9	0.0106	0.38	0.01	0.84	0.405	1.234	687	357.0	0.094	0.178	61	56.72
Chickaskia Lower	OK621100-00-0010B	42072	18-Nov-08	10.50	89.0	38.8	I	264	8.2	933.0	8.1	93.1	102.3	0.0106	1.35	0.01	0.42	1.375	1.784	584	416.0	0.134	0.181	32	
Chickaskia Lower	OK621100-00-0010B	42359	30-Dec-08	11.03	84.9	55.8	I	258	4.3	1103.0	8.2	157.5	138.9	0.0106	1.96	0.01	0.47	1.985	2.444	667	403.0	0.080	0.134	48	
Chickaskia Lower	OK621100-00-0010B	42823	10-Feb-09	8.13	72.7	12.3	O	259	10.5	1076.0	8.3	154.6	161.0	0.0106	1.79	0.01	0.35	1.815	2.154	665	415.0	0.043	0.100	15	
Chickaskia Lower	OK621100-00-0010B	43032	10-Mar-09	9.83	94.5	15.7	I	225	13.9	1045.0	8.2	150.2	156.9	0.0106	0.76	0.01	0.55	0.785	1.324	640	386.0	0.013	0.091	23	
Chickaskia Lower	OK621100-00-0010B	43346	14-Apr-09	9.63	87.3	369.0	I	211	11.0	1065.0	8.1	118.5	216.7	0.1180	1.28	0.01	0.35	1.412	1.644	717	425.0	0.166	0.168	571	
Chickaskia Upper	OK621100-00-0010M	37150	29-May-07	7.71	87.0	482.0	I	84	21.3	254.7	7.6	23.9	27.3	0.0106	0.68	0.07	1.29	0.761	2.040	263	111.9	0.304	0.541	402	
Chickaskia Upper	OK621100-00-0010M	37332	25-Jun-07	6.16	71.4	177.0	I	139	27.1	691.0	7.5	44.0	53.1	0.0106	1.07	0.01	0.50	1.095	1.584	415	254.4	0.196	0.319	137	
Chickaskia Upper	OK621100-00-0010M	37815	30-Jul-07	9.53	123.7	36.7	I	276	29.3	855.0	8.8	71.3	72.2	0.0106	0.77	0.01	0.22	0.795	1.004	497	315.1	0.078	0.167	65	
Chickaskia Upper	OK621100-00-0010M	38263	10-Sep-07	9.03	9.0	46.2	I	203	26.9	880.0	8.0	101.0	79.2	0.0106	0.49	0.01	0.43	0.515	0.934	514	300.4	0.053	0.121	41	98.93
Chickaskia Upper	OK621100-00-0010M	38419	15-Oct-07	8.55	92.5	84.7	I	182	19.1	725.0	8.1	59.0	64.5	0.0106	0.25	0.17	0.11	0.431	0.530	408	259.2	0.063	0.182	202	
Chickaskia Upper	OK621100-00-0010M	38565	13-Nov-07	13.99	139.9	10.5	O	188	15.3	827.0	6.5	70.9	69.3	0.0106	1.00	0.01	0.18	1.025	1.194	481	314.8	0.045	0.077	22	44.69
Chickaskia Upper	OK621100-00-0010M	38707	17-Dec-07	14.52	104.7	39.1	I	155	1.9	807.0	6.9	65.0	66.8	0.0106	2.69	0.01	0.08	2.715	2.782	425	253.0	0.146	0.167	7	
Chickaskia Upper	OK621100-00-0010M	39200	22-Jan-08	15.16	108.8	15.6	I	232	0.6	973.0	7.1	88.2	88.6	0.0106	2.15	0.01	0.31	2.175	2.474	552	351.0	0.050	0.078	7	
Chickaskia Upper	OK621100-00-0010M	39658	03-Mar-08	9.41	80.4	1000.0	I	141	8.6	775.0	7.2	80.7	103.9	0.1080	1.85	0.01	2.06	1.972	3.924	487	266.0	0.352	0.767	1066	
Chickaskia Upper	OK621100-00-0010M	39938	07-Apr-08	10.22	101.1	31.9	I	149	14.9	896.0	8.5	187.8	218.5	0.0106	0.83	0.01	0.08	0.855	0.922	504	338.4	0.041	0.109	32	
Chickaskia Upper	OK621100-00-0010M	40263	12-May-08	8.48	89.7	163.0	I	177	18.0	481.4	8.0	33.4	41.1	0.0180	0.71	0.01	0.08	0.742	0.802	3168	174.5	0.176	0.244	122	
Chickaskia Upper	OK621100-00-0010M	41231	25-Aug-08	10.99	139.7		I	187	27.4	9.2	8.1	90.3	70.1	0.0106	0.57	0.01	0.70	0.595	1.284	508	402.0	0.116	0.174	30	126.91
Chickaskia Upper	OK621100-00-0010M	42076	18-Nov-08	11.60	98.9	23.3	I	278	8.4	843.0	8.3	62.5	82.5	0.0106	1.54	0.01	0.26	1.565	1.814	497	351.0	0.120	0.152	11	
Chickaskia Upper	OK621100-00-0010M	42363	30-Dec-08	13.45	102.9	21.8	I	250	4.1	860.0	8.3	85.4	111.5	0.0106	2.13	0.01	0.44	2.155	2.584	557	400.0	0.062	0.102	22	
Chickaskia Upper	OK621100-00-0010M	42827	10-Feb-09	11.54	106.8	13.0	O	251	11.8	838.0	8.3	83.4	126.0	0.0106	1.96	0.01	0.39	1.985	2.364	505	335.0	0.027	0.106	17	
Chickaskia Upper	OK621100-00-0010M	43036	10-Mar-09	9.70	93.2	11.3	I	235	13.5	779.0	8.3	138.6	170.6	0.0106	0.88	0.01	0.52	0.905	1.414	457	286.0	0.016	0.098	29	
Chickaskia Upper	OK621100-00-0010M	43350	14-Apr-09	10.91	98.3	135.0	I	200	10.6	631.0	8.0	94.0	100.5	0.0380	1.44	0.01	0.35	1.492	1.804	443	255.0	0.114	0.153	126	
Chilocco Creek	OK621210-00-0270C	37152	29-May-07	8.41	95.6	38.6	I	149	21.5	574.0	8.0	26.1	31.6	0.0106	0.28	0.01	0.39	0.305	0.684	347	261.1	0.041	0.083	7	10.54
Chilocco Creek	OK621210-00-0270C	37333	25-Jun-07	8.17	101.0	19.0	I	205	27.0	651.0	8.1	29.4	24.8	0.0106	0.14	0.01	0.08	0.165	0.232	380	270.8	0.032	0.069	7	
Chilocco Creek	OK621210-00-0270C	37817	30-Jul-07	9.37	119.5	14.7	I	316	28.1	654.0	8.2	56.4	53.5	0.0106	0.14	0.01	0.08	0.165	0.232	373	276.5	0.014	0.040	15	0.00
Chilocco Creek	OK621210-00-0270C	38265	10-Sep-07	7.13	85.2	64.5	I	210	24.3	727.0	7.9	48.9	37.4	0.0370	0.53	0.01	0.52	0.581	1.064	427	267.0	0.128	0.196	68	12.91
Chilocco Creek	OK621210-00-0270C	38421	15-Oct-07	7.03	73.9	20.3		147	17.6	723.0	7.8	49.4	30.6	0.0106	0.28	0.14	0.25	0.431	0.670	411	300.0	0.150	0.274	65	9.26
Chilocco Creek	OK621210-00-0270C	38567	13-Nov-07	6.64	63.9	9.7	O	260	14.0	789.0	7.6	40.0	28.8	0.0106	0.31	0.13	0.38	0.451	0.820	439	299.6	0.112	0.161	17	0.00
Chilocco Creek	OK621210-00-0270C	38709	17-Dec-07	14.06	98.0	15.6	I	144	0.7		7.9	138.7	69.1	0.0106	3.00	0.01	0.38	3.025	3.394	495	304.6	0.104	0.135	7	
Chilocco Creek	OK621210-00-0270C	39202	23-Jan-08	13.21	91.3	6.5	O	238	0.3	560.0	7.1	53.3	60.9	0.0106	0.14	0.01	0.08	0.165	0.232	300	306.7	0.009	0.020	7	0.51
Chilocco Creek	OK621210-00-0270C	39660	03-Mar-08	9.12	75.4	119.0	I	113	7.2	664.0	7.2	43.4	36.7	0.0970	1.03	0.01	1.60	1.141	2.644	405	246.0	0.086	0.179	70	
Chilocco Creek	OK621210-00-0270C	39936	07-Apr-08	8.49	80.1	43.6	I	201	12.7	805.0	8.1	39.9	39.3	0.0250	0.19	0.01	0.08	0.229	0.282	449	306.4	0.038	0.085	53	10.86
Chilocco Creek	OK621210-00-0270C	40267	13-May-08	7.56	72.8	125.0	I	189	17.5	522.0	7.1	23.1	21.9	0.0340	0.62	0.01	0.08	0.668	0.712	376	246.7	0.120	0.202	82	
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	5.76	71.5	44.0	I	278	26.3	788.0	7.8														2.57
Chilocco Creek	OK621210-00-0270C	41233	25-Aug-08	7.91	94.9	50.5	I	0	24.5	832.0	7.7	82.4	51.0	0.0106	0.14	0.01	0.08	0.165	0.232	468	614.0	0.076	0.154	34	1.46
Chilocco Creek	OK621210-00-0270C	42074	18-Nov-08	10.19	82.3	5.6	O	333	6.3	890.0	8.0	74.2	47.0	0.0106	0.24	0.01	0.35	0.265	0.604	526	367.0	0.088	0.126	7	3.69
Chilocco Creek	OK621210-00-0270C	42361	30-Dec-08	11.73	87.8	8.4	O	291	3.3	2233.0	8.1	560.9	63.9	0.0106	0.53	0.01	0.64	0.555	1.184	1218	495.0	0.014	0.074	7	9.51
Chilocco Creek	OK621210-00-0270C	42825	10-Feb-09	8.77	77.6	12.8	O	319	9.9	881.0	7.9	101.5	66.2	0.0106	0.12	0.01	0.53	0.145	0.664	507	308.0	0.030	0.122	18	9.06
Chilocco Creek	OK621210-00-0270C	43034	10-Mar-09	8.82	83.0	128.0	I	281	12.5	831.0	8.0	99.5	114.8	0.0510	0.05	0.01	0.59	0.115	0.654	495	322.0	0.055	0.099	60	
Chilocco Creek	OK621210-00-0270C	43348	14-Apr-09	9.92	85.5	154.0	I	133	8.6	353.0	7.7	38.5	33.6	0.1150	1.07	0.01	1.98	1.199	3.064	311	162.0	0.104	0.451	48	
Cimarron Beaver Co.	OK620930-00-0010T	42383	29-Dec-06	11.86	101.4	4.8	I	212	8.5	1460.0	8.4	1348.8	274.1	0.0106	2.08	0.01	0.46	2.105	2.554	2606	470.0	0.199	0.236	10	31.45
Cimarron Beaver Co.	OK620930-00-0010T	37191	04-Jun-07	7.86	107.3	27.4	I	242	31.8	4513.0	8.4	1073.3	184.7	0.0106	0.11	0.01	0.65	0.135	0.774	2486	427.1	0.326	0.366	52	34.61

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissSolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Cimarron Beaver Co.	OK620930-00-0010T	37727	09-Jul-07	8.22	115.1	24.6	I	288	32.9	4670.0	8.6	1105.7	188.3	0.0106	1.57	0.01	1.29	1.595	2.874	2658	460.8	1.007	1.018	64	17.58
Cimarron Beaver Co.	OK620930-00-0010T	37975	06-Aug-07	9.07	128.6	28.5	I	246	34.0	4880.0	8.7	1096.6	197.9	0.0106	1.24	0.01	1.32	1.265	2.574	2707	471.4	0.672	0.813	74	15.92
Cimarron Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	6.54	74.7	34.1	I	170	21.9	488.0	8.4														12.87
Cimarron Beaver Co.	OK620930-00-0010T	38300	10-Sep-07	9.15	98.5	33.1	I	232	19.0	4798.0	8.6	1065.0	171.0	0.0106	0.86	0.01	1.86	0.885	2.734	2578	461.4	0.309	0.514	654	31.43
Cimarron Beaver Co.	OK620930-00-0010T	38466	22-Oct-07	10.94	107.5	16.5	I	243	14.5	4888.0	8.7	1193.6	180.1	0.0106	2.47	0.01	0.58	2.495	3.064	2688	487.6	0.537	0.547	29	23.59
Cimarron Beaver Co.	OK620930-00-0010T	38623	26-Nov-07	9.73	78.8	15.8	I	241	6.3	4158.0	8.6	1275.0	189.4	0.0106	3.35	0.01	0.66	3.375	4.024	2518	480.9	0.971	0.997	24	37.50
Cimarron Beaver Co.	OK620930-00-0010T	39122	07-Jan-08	10.89	100.3	7.6	I	223	11.6	3352.0	8.5	1061.5	233.9	0.1320	3.89	0.01	0.53	4.036	4.434	2461	464.8	0.952	0.914	16	40.26
Cimarron Beaver Co.	OK620930-00-0010T	39457	04-Feb-08	11.24	107.3	5.4	I	220	13.2	2850.0	8.5	1079.1	181.6	0.0106	3.09	0.01	0.35	3.115	3.454	2558	454.2	0.715	0.725	17	34.38
Cimarron Beaver Co.	OK620930-00-0010T	39724	10-Mar-08	10.62	109.9	6.1	I	222	17.0	3297.0	8.6	1328.9	205.8	0.0106	1.93	0.01	0.23	1.955	2.174	2556	478.3	0.483	0.488	20	34.01
Cimarron Beaver Co.	OK620930-00-0010T	40046	14-Apr-08	10.22	111.1	11.0	I	240	19.4	3605.0	8.5	1065.7	183.0	0.0106	0.81	0.01	0.42	0.835	1.244	2525	483.0	0.308	0.343	33	35.46
Cimarron Beaver Co.	OK620930-00-0010T	40253	12-May-08	9.11	107.5	16.6	I	249	23.6	4795.0	8.4	1201.3	254.9	0.0106	0.14	0.01	0.61	0.165	0.764	2765	511.6	0.347	0.379	39	56.42
Cimarron Beaver Co.	OK620930-00-0010T	40501	16-Jun-08	9.70	116.6	52.2	I	170	24.7	5050.0	8.9	1481.2	241.1	0.0106	0.01	0.01	2.18	0.039	2.208	2814	432.0	0.062	0.567	114	14.96
Cimarron Beaver Co.	OK620930-00-0010T	40938	21-Jul-08	9.30	129.2	47.6	I	139	33.3	4870.0	9.0	1447.8	229.5	0.0106	0.01	0.01	1.99	0.039	2.018	2706	295.0	0.041	0.497	160	11.91
Cimarron Beaver Co.	OK620930-00-0010T	41248	25-Aug-08	7.81	102.5	19.6	I	249	29.5	4890.0	8.3	1320.8	221.7	0.1600	0.30	0.01	0.41	0.474	0.724	2712	450.0	0.177	0.265	38	28.13
Cimarron Beaver Co.	OK620930-00-0010T	41589	29-Sep-08	8.99	108.1	13.4	I	238	24.6	3786.0	8.5	1293.9	175.4	0.0106	1.28	0.01	0.37	1.305	1.664	2781	425.0	0.188	0.236	30	
Cimarron Beaver Co.	OK620930-00-0010T	42001	03-Nov-08	10.38	110.5	2.9	I	245	18.4	3044.0	8.5	1235.3	255.0	0.0106	0.01	0.01	0.40	0.039	0.428	2749	470.0	0.144	0.173	7	32.25
Cimarron Beaver Co.	OK620930-00-0010T	42795	02-Feb-09	12.42	104.3	4.9	I	221	7.8	1674.0	8.4	1887.8	296.9	0.0106	1.78	0.01	0.36	1.805	2.154	2603	405.0	0.223	0.242	7	
Cimarron Beaver Co.	OK620930-00-0010T	43060	09-Mar-09	9.09	90.3	7.5	I	225	15.0	2098.0	8.6	1366.7	197.6	0.0106	1.13	0.01	0.46	1.155	1.604	2607	485.0	0.171	0.231	18	33.91
Cimarron Beaver Co.	OK620930-00-0010T	43307	06-Apr-09	10.58	102.0	4.5	I	224	13.7	2144.0	8.5	1281.8	197.3	0.0170	1.48	0.01	0.71	1.511	2.204	2643	470.0	0.122	0.279	7	
Cimarron Cimarron Co.	OK720900-00-0180C	37188	04-Jun-07	5.34	58.0	14.0	I	278	19.4	1939.0	7.6	52.0	608.9	0.0106	0.01	0.01	0.08	0.039	0.106	1355	576.7	0.025	0.055	11	0.21
Cimarron Cimarron Co.	OK720900-00-0180C	37724	09-Jul-07	3.79	44.4	10.2	O	290	23.3	1382.0	7.5	34.4	375.2	0.0106	0.01	0.01	0.45	0.039	0.478	947	455.1	0.012	0.047	11	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	2.04	23.8	3.7	O	359	23.3	1939.0	7.8														0.00
Cimarron Cimarron Co.	OK720900-00-0180C	37972	06-Aug-07	1.82	21.4	12.4	O	113	23.9	1189.0	7.9	54.6	528.2	0.0106	0.06	0.01	0.59	0.085	0.664	775	347.2	0.012	0.097	11	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	38296	10-Sep-07	2.43	25.9	7.7	O	311	18.2	2406.0	7.6	86.2	883.6	0.0106	0.01	0.01	0.52	0.039	0.548	1823	763.3	0.009	0.036	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	38624	26-Nov-07	3.59	28.2	7.6	O	508	3.7	2753.0	7.5	88.2	1019.7	0.0106	0.01	0.20	0.46	0.225	0.674	2089	946.8	0.006	0.016	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	39453	04-Feb-08	9.28	68.8	9.3	O	375	3.3	2224.0	8.2	76.0	966.4	0.0106	0.01	0.01	0.63	0.039	0.658	1857	889.7	0.024	0.064	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	39720	10-Mar-08	8.13	61.0	6.8	O	369	4.4	1723.0	8.0	88.6	1306.5	0.0106	0.23	0.01	0.17	0.255	0.414	2092	1047.6	0.005	0.042	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	40042	14-Apr-08	7.00	56.2	4.2	O	283	6.4	3025.0	8.1	100.5	1126.6	0.0106	0.01	0.01	0.93	0.039	0.958	2206	991.0	0.012	0.046	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	40249	12-May-08	4.81	44.4	4.7	O	118	12.1	2619.0	8.5	101.0	1063.8	0.0106	0.01	0.01	0.62	0.039	0.648	1853	789.4	0.008	0.030	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	40934	21-Jul-08	5.23	59.1	48.3	I	269	21.4	2456.0	8.0	144.4	1215.2	0.1850	0.45	0.01	3.89	0.649	4.354	2403	880.0	0.022	0.176	51	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	41244	25-Aug-08	5.21	60.9	132.0	I	169	23.5	813.0	7.8	21.4	197.6	0.0380	0.23	0.01	0.08	0.282	0.322	586	264.0	0.072	0.141	28	3.51
Cimarron Cimarron Co.	OK720900-00-0180C	41585	29-Sep-08	5.10	51.3	13.6	O	328	15.9	2317.0	8.0	71.1	772.7	0.0170	0.17	0.01	1.15	0.201	1.334	1598	700.0	0.009	0.090	18	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	41997	03-Nov-08	5.33	46.8	36.4	O	240	9.9	2102.0	8.1	66.0	690.9	0.0106	0.01	0.01	1.42	0.039	1.448	1384	590.0	0.018	0.121	34	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	42379	29-Dec-08	18.34	135.4	10.3	O	337	2.2	1286.0	8.2	110.8	957.8	0.0106	0.01	0.01	1.50	0.039	1.528	1915	825.0	0.013	0.104	12	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	42791	02-Feb-09	6.71	49.9	5.7	O	434	3.1		7.3	79.5	1294.8	0.0106	10.04	0.01	0.37	10.065	10.424	1953	855.0	0.028	0.043	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	43055	09-Mar-09	4.08	32.5	7.8	O	356	6.5	1520.0	8.0	115.5	1701.5	0.0106	0.33	0.01	1.39	0.355	1.734	2322	995.0	0.008	0.087	7	0.00
Cimarron Cimarron Co.	OK720900-00-0180C	43302	06-Apr-09	8.98	69.7	3.6	O	145	5.4	1415.0	8.7	78.3	940.5	0.0106	0.01	0.01	0.85	0.039	0.878	1253	485.0	0.014	0.124	7	0.00
Clear Beaver Co.	OK720500-02-0300F	37190	04-Jun-07	6.49	77.2	2.1	O	263	24.0	1405.0	7.6	229.8	81.0	0.0106	0.01	0.01	0.19	0.039	0.218	779	368.8	0.004	0.021	7	2.23
Clear Beaver Co.	OK720500-02-0300F	37726	09-Jul-07	7.08	88.7	2.2	O	256	26.8	1595.0	7.6	255.4	163.4	0.0106	0.01	0.01	0.38	0.039	0.408	967	476.1	0.006	0.018	7	0.00
Clear Beaver Co.	OK720500-02-0300F	37974	06-Aug-07	8.73	112.9	1.9	O	223	28.6	1934.0	7.8	320.4	312.6	0.0106	0.01	0.01	0.30	0.039	0.328	1214	623.3	0.005	0.020	7	0.07
Clear Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	5.93	72.9	9.7	O	207	26.1	1970.0	7.5														
Clear Beaver Co.	OK720500-02-0300F	38298	10-Sep-07	6.27	70.1	1.6	O	222	20.7	1996.0	7.4	290.6	367.1	0.0106	0.01	0.01	0.34	0.039	0.368	1240	619.0	0.006	0.023	7	0.01
Clear Beaver Co.	OK720500-02-0300F	38464	22-Oct-07	12.50	112.5	1.5	O	139	10.8	1990.0	8.3	266.5	492.6	0.0106	0.07	0.63	0.23	0.711	0.930	1430	767.0	0.006	0.013	7	
Clear Beaver Co.	OK720500-02-0300F	38626	27-Nov-07	12.53	98.3	3.5	O	249	5.1	2434.0	7.8	316.8	630.9	0.0106	0.01	0.01	0.08	0.039	0.106	1670	1018.5	0.007	0.014	7	0.02
Clear Beaver Co.	OK720500-02-0300F	39120	07-Jan-08	10.78	87.7	0.9	O	210	6.5	1474.0	8.1	274.9	114.3	0.0106	0.01	0.01	0.16	0.039	0.188	743	363.5	0.021	0.023	7	21.37
Clear Beaver Co.	OK720500-02-0300F	39455	04-Feb-08	11.18	92.1	1.0	O	235	7.0	1540.0	8.1	292.8	120.4	0.0106	0.01	0.01	0.13	0.039	0.158	797	374.7	0.004	0.012	7	3.34
Clear Beaver Co.	OK720500-02-0300F	39722	10-Mar-08	9.16	78.8	1.1	O	231	8.7	1520.0	8.2	247.9	106.2	0.0106	0.01	0.01	0.14	0.039	0.168	804	374.9	0.008	0.016	7	3.14
Clear Beaver Co.	OK720500-02-0300F	40044	14-Apr-08	9.64	28.2	1.5	O	267	11.3	1620.0	8.0	324.3	121.9	0.0106	0.01	0.01	0.57	0.039	0.598	880	407.4	0.005	0.010	7	2.92
Clear Beaver Co.	OK720500-02-0300F	40251	12-May-08	10.36	108.2	1.8	O	261	17.5	1500.0	8.1	294.2	120.7	0.0106	0.01	0.01	0.21	0.039	0.238	821	455.5	0.004	0.004	7	1.23
Clear Beaver Co.	OK720500-02-0300F	40499	16-Jun-08	6.00	66.8	15.8	I	270	23.8	1310.0	7.6	388.0	299.2	0.0106	0.01	0.01	0.39	0.039	0.418	1183	508.0	0.004	0.025	7	0.03
Clear Beaver Co.	OK720500-02-0300F	40936	21-Jul-08	5.26	66.2	11.0	O	263	27.2	1736.0	7.7	364.7	233.0	0.0106	0.01	0.01	0.57	0.039	0.598	1105	575.0	0.007	0.011	7	0.00

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Clear Beaver Co.	OK720500-02-0300F	41246	25-Aug-08	4.44	52.5	5.2	O	256	23.7	1275.0	7.8	230.2	59.9	0.0250	0.01	0.01	0.47	0.053	0.498	744	330.0	0.022	0.045	7	8.26
Clear Beaver Co.	OK720500-02-0300F	41587	29-Sep-08	6.34	69.2	5.3	O	270	19.7	1653.0	7.7	316.4	164.5	0.0106	0.01	0.01	0.36	0.039	0.388	947	465.0	0.006	0.030	7	0.00
Clear Beaver Co.	OK720500-02-0300F	41999	03-Nov-08	9.49	92.7	3.7	O	254	14.3	1495.0	8.1	245.7	107.2	0.0106	0.01	0.01	0.46	0.039	0.488	798	425.0	0.007	0.018	7	0.00
Clear Beaver Co.	OK720500-02-0300F	42381	29-Dec-08	13.46	103.6	0.9	O	242	6.0	1290.0	8.3	246.7	109.1	0.0106	0.01	0.01	0.42	0.039	0.448	730	340.0	0.004	0.013	7	0.00
Clear Beaver Co.	OK720500-02-0300F	42793	02-Feb-09	12.81	93.3	1.2	O	224	3.2	1332.0	8.2	323.1	131.5	0.0106	0.03	0.01	0.28	0.055	0.324	725	265.0	0.008	0.017	7	
Clear Beaver Co.	OK720500-02-0300F	43059	09-Mar-09	8.19	75.6	1.6	O	234	11.7	1210.0	8.1	238.3	94.4	0.0106	0.01	0.01	0.38	0.039	0.408	749	370.0	0.005	0.041	7	0.00
Clear Beaver Co.	OK720500-02-0300F	43306	06-Apr-09	11.19	92.3	1.1	O	247	7.4	1328.0	8.2	260.4	94.0	0.0106	0.01	0.01	0.53	0.039	0.558	827	340.0	0.017	0.086	7	0.00
Clear Harper Co.	OK720500-02-0070G	37195	05-Jun-07	7.45	80.1	1.7	O	221	18.8	798.0	7.6	81.3	36.9	0.0106	0.40	0.01	0.08	0.425	0.492	456	235.8	0.012	0.014	7	6.40
Clear Harper Co.	OK720500-02-0070G	37180	28-Jun-07	5.51	59.6	1.9	O	208	19.8	669.0	7.1														5.27
Clear Harper Co.	OK720500-02-0070G	37731	10-Jul-07	6.83	78.5	2.5	I	221	22.2	758.0	7.7	80.5	34.2	0.0106	0.36	0.01	0.08	0.385	0.452	447	251.5	0.010	0.025	7	3.22
Clear Harper Co.	OK720500-02-0070G	37979	07-Aug-07	8.46	101.5	9.3	I	225	24.5	764.0	8.0	81.0	38.4	0.0190	0.38	0.01	0.17	0.413	0.564	431	245.1	0.014	0.040	19	3.16
Clear Harper Co.	OK720500-02-0070G	38304	11-Sep-07	8.26	82.3	4.7	I	209	15.2	722.0	8.0	94.0	38.3	0.0106	0.82	0.01	0.08	0.845	0.912	427	240.5	0.013	0.027	7	4.19
Clear Harper Co.	OK720500-02-0070G	38469	23-Oct-07	9.71	84.1	1.9	I	204	9.0	687.0	8.1	182.4	53.0	0.0106	0.86	0.46	0.16	1.331	1.480	397	252.6	0.010	0.141	7	4.17
Clear Harper Co.	OK720500-02-0070G	38620	26-Nov-07	11.43	87.3	3.5	I	230	4.0	710.0	8.3	82.5	53.9	0.0106	0.94	0.01	0.08	0.965	1.032	406	245.3	0.007	0.007	7	9.75
Clear Harper Co.	OK720500-02-0070G	39125	08-Jan-08	11.77	96.4	2.5	I	229	6.7	691.0	8.3	79.2	38.6	0.0106	0.90	0.01	0.08	0.925	0.992	407	241.1	0.014	0.021	7	7.01
Clear Harper Co.	OK720500-02-0070G	39461	04-Feb-08	11.20	105.0	2.1	I	187	12.5	755.0	8.5	70.0	30.5	0.0106	1.00	0.01	0.08	1.025	1.092	401	226.7	0.004	0.017	7	6.53
Clear Harper Co.	OK720500-02-0070G	39727	11-Mar-08	10.68	88.5	6.5	I	202	7.2	709.0	8.2	91.8	70.1	0.0106	0.65	0.01	0.08	0.675	0.742	399	241.9	0.007	0.024	7	7.13
Clear Harper Co.	OK720500-02-0070G	40049	15-Apr-08	11.09	100.1	4.0	I	218	10.7	770.0	8.2	96.5	62.5	0.0240	0.55	0.01	2.52	0.588	3.084	407	226.4	0.005	0.035	7	8.75
Clear Harper Co.	OK720500-02-0070G	40256	13-May-08	8.89	91.1	3.2	I	201	16.5	733.0	8.1	95.2	55.2	0.0106	0.37	0.01	0.08	0.395	0.462	407	248.7	0.005	0.027	7	5.22
Clear Harper Co.	OK720500-02-0070G	40504	17-Jun-08	6.11	67.4	19.2	I	178	20.3	712.0	7.8	87.0	41.6	0.0250	0.47	0.01	0.08	0.509	0.562	406	258.0	0.039	0.077	34	4.43
Clear Harper Co.	OK720500-02-0070G	40941	22-Jul-08	6.98	82.0	11.6	I	197	23.4	719.0	8.0	114.0	58.0	0.0106	0.38	0.01	0.25	0.405	0.644	407	1705.0	0.014	0.040	17	3.08
Clear Harper Co.	OK720500-02-0070G	41251	26-Aug-08	6.98	77.9	4.5	I	202	20.7	728.0	7.8	89.7	32.9	0.0106	0.37	0.01	0.08	0.395	0.462	412	232.0	0.006	0.023	7	5.94
Clear Harper Co.	OK720500-02-0070G	41592	30-Sep-08	8.21	79.9	5.4	I	203	14.1	754.0	8.0	76.9	31.5	0.0106	0.53	0.01	0.08	0.555	0.622	422	250.0	0.008	0.025	7	
Clear Harper Co.	OK720500-02-0070G	42005	04-Nov-08	10.83	104.5	1.9	I	216	13.7	825.0	8.0	80.2	33.1	0.0106	0.60	0.01	0.17	0.625	0.784	420	254.0	0.006	0.016	7	5.02
Clear Harper Co.	OK720500-02-0070G	42386	30-Dec-08	10.82	84.8	4.2	O	201	5.0	774.0	8.0	97.5	59.8	0.0106	0.83	0.01	0.14	0.855	0.984	423	205.0	0.004	0.019	7	5.74
Clear Harper Co.	OK720500-02-0070G	42797	02-Feb-09	10.85	91.0	7.6	O	212	7.7	736.0	8.3	165.9	61.6	0.0106	0.66	0.01	0.16	0.685	0.834	418	238.0	0.008	0.038	7	
Clear Harper Co.	OK720500-02-0070G	43064	10-Mar-09	10.29	87.2	7.0	I	196	8.1	742.0	8.3	87.1	35.2	0.0106	0.68	0.01	0.19	0.705	0.884	411	238.0	0.006	0.046	7	10.86
Clear Harper Co.	OK720500-02-0070G	43310	07-Apr-09	10.44	83.5	2.5	I	205	5.8	775.0	8.1	124.1	88.1	0.0106	0.54	0.01	0.34	0.565	0.894	446	234.0	0.007	0.185	7	
Cooper Creek	OK620910-02-0040C	37128	29-May-07	5.92	67.6	55.4	I	278	21.6	2460.0	8.1	282.7	524.0	0.0106	0.74	0.01	1.17	0.765	1.924	1710	732.9	0.193	0.289	39	11.35
Cooper Creek	OK620910-02-0040C	37313	25-Jun-07	6.37	78.7	312.0	I	150	26.2	916.0	7.8	70.6	192.2	0.0106	0.34	0.01	1.10	0.365	1.454	724	308.5	0.391	0.523	228	37.55
Cooper Creek	OK620910-02-0040C	37801	31-Jul-07	4.64	56.6	795.0	I	74	24.9	534.0	7.4	65.6	99.6	0.0106	0.68	0.01	1.19	0.705	1.884	507	154.2	0.745	1.073	510	
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	14.27	192.3	4.6	O	300	30.7	1967.0	8.3														10.73
Cooper Creek	OK620910-02-0040C	38335	18-Sep-07	11.10	128.9	14.8	I	312	22.8	2786.0	8.2	342.2	744.6	0.0106	0.98	0.01	0.47	1.005	1.464	1902	915.9	0.047	0.085	14	11.35
Cooper Creek	OK620910-02-0040C	38403	16-Oct-07	8.45	86.1	28.3	I	232	16.1	2903.0	8.2	334.3	679.3	0.0150	0.93	0.73	0.65	1.675	2.310	2008	921.0	0.083	0.134	24	10.35
Cooper Creek	OK620910-02-0040C	38550	14-Nov-07	10.37	98.9	5.7	I	363	13.2	2697.0	8.2	325.3	644.0	0.0106	0.85	0.01	0.49	0.875	1.354	1883	792.2	0.011	0.048	7	7.63
Cooper Creek	OK620910-02-0040C	38696	17-Dec-07	13.36	95.0	20.3	I	313	1.4		8.2	256.3	569.0	0.0370	2.15	0.01	0.99	2.201	3.154	1508	714.9	0.197	0.246	13	5.01
Cooper Creek	OK620910-02-0040C	39176	23-Jan-08	13.91	95.4	27.9	I	409	0.1		8.3	315.3	649.6	0.0410	2.34	0.01	0.52	2.395	2.874	2033	956.7	0.075	0.114	23	7.44
Cooper Creek	OK620910-02-0040C	39634	04-Mar-08	11.08	87.8	410.0	I	245	5.4	1664.0	8.3	233.9	500.3	0.1000	1.15	0.01	1.52	1.264	2.684	1426	510.0	0.285	0.455	167	
Cooper Creek	OK620910-02-0040C	39922	08-Apr-08	8.02	76.2	94.6	I	220	13.1	2159.0	8.2	267.1	578.3	0.0106	0.48	0.01	1.05	0.505	1.544	1466	610.0	0.093	0.141	75	20.78
Cooper Creek	OK620910-02-0040C	40236	13-May-08	9.51	103.2	30.8	I	307	19.3	1886.0		199.7	454.5	0.0106	1.16	0.01	0.53	1.185	1.704	1402	823.1	0.176	0.198	18	15.40
Cooper Creek	OK620910-02-0040C	40475	07-Jun-08	7.35	82.4	272.0	I	328	21.5	2027.0	7.8	239.9	402.5	0.0106	1.06	0.01	0.64	1.085	1.714	1399	695.0	0.309	0.413	270	
Cooper Creek	OK620910-02-0040C	40921	22-Jul-08	7.23	90.8	15.5	O	343	26.9	2121.0	8.2	317.4	475.4	0.0106	0.56	0.01	0.75	0.585	1.324	1585	680.0	0.059	0.125	11	8.44
Cooper Creek	OK620910-02-0040C	41215	26-Aug-08	7.87	92.7	21.5	O	309	23.6	2267.0	8.1	277.7	617.5	0.0620	0.64	0.01	0.61	0.716	1.264	1764	824.0	0.088	0.140	18	2.57
Cooper Creek	OK620910-02-0040C	41562	30-Sep-08	7.18	76.5	20.7	O	328	18.4	2657.0	8.2	334.4	517.2	0.0610	0.62	0.01	0.25	0.695	0.884	1709	741.0	0.054	0.104	22	4.13
Cooper Creek	OK620910-02-0040C	41995	04-Nov-08	10.65	105.1	6.8	O	334	14.8	2652.0	8.2	462.9	886.4	0.0106	0.58	0.01	0.56	0.605	1.154	1842	840.0	0.017	0.044	7	3.51
Cooper Creek	OK620910-02-0040C	42285	16-Dec-08	14.55	101.0	20.8	O	360	0.5		7.9	331.9	711.8	0.0106	1.04	0.01	0.62	1.065	1.674	1998	1005.0	0.019	0.054	24	2.59
Cooper Creek	OK620910-02-0040C	42766	03-Feb-09	12.68	95.3	4.7	O	372	3.4	2364.0	8.1	439.8	1011.0	0.0106	1.42	0.10	0.72	1.531	2.240	1929	1195.0	0.012	0.038	7	7.21
Cooper Creek	OK620910-02-0040C	42981	03-Mar-09	13.41	105.3	4.7	O	312	5.1	2574.0	8.2	407.7	963.8	0.0106	0.46	0.01	0.41	0.485	0.884	1916	785.0	0.014	0.052	7	6.90
Cooper Creek	OK620910-02-0040C	43289	07-Apr-09	12.26	103.7	4.8	O	280	8.0	2648.0	8.4	343.2	878.8	0.0400	0.48	0.01	0.76	0.534	1.254	1951	865.0	0.015	0.189	7	
Cottonwood Creek	OK620910-04-0010D	37146	30-May-07	7.49	84.5		I		21.3	633.0	7.6	47.4	80.0	0.0106	1.60	0.01	2.15	1.625	3.764	407	208.3	0.652	0.955	831	
Cottonwood Creek	OK620910-04-0010D	37960	24-Jul-07			1000.0						56.7	88.8	0.0240	1.21	0.01	2.19	1.248	3.414	505	216.6	0.626	0.981	1314	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Cottonwood Creek	OK620910-04-0010D	38021	08-Aug-07	7.02	88.9	25.4	I	276	28.3	1308.0	7.7	111.0	186.2	0.0106	3.83	0.01	0.67	3.855	4.514	786	428.7	0.889	0.977	38	48.81
Cottonwood Creek	OK620910-04-0010D	38259	11-Sep-07	6.95	81.9	48.2	I	271	24.1	1242.0	8.0	91.6	142.0	0.0106	3.18	0.06	0.56	3.251	3.800	726	405.4	0.913	0.917	60	
Cottonwood Creek	OK620910-04-0010D	38409	15-Oct-07	7.08	79.0	168.0	I	242	19.7		8.0	111.3	163.3	0.0106	3.99	0.28	0.71	4.281	4.980	736	383.8	1.408	1.554	186	
Cottonwood Creek	OK620910-04-0010D	38570	13-Nov-07	9.30	94.2	10.7	I	276	15.9	1328.0	7.9	120.5	179.7	0.0106	5.11	0.20	0.60	5.321	5.910	799	433.6	1.123	1.133	11	66.15
Cottonwood Creek	OK620910-04-0010D	38726	18-Dec-07	11.66	90.0	24.4	I	223	4.5	1124.0	8.2	103.4	151.0	0.1360	2.54	0.01	0.32	2.690	2.874	627	336.3	0.408	0.435	21	118.68
Cottonwood Creek	OK620910-04-0010D	39188	23-Jan-08			9.4		270				123.7	179.1	0.0106	5.02	0.01	0.56	5.045	5.594	780	416.3	0.990	1.032	11	
Cottonwood Creek	OK620910-04-0010D	39642	03-Mar-08	9.06	80.9	1000.0	I		10.6	544.0	8.1	63.4	67.6	0.1750	0.82	0.01	1.71	1.009	2.544	352	162.8	0.581	1.182	2047	
Cottonwood Creek	OK620910-04-0010D	39933	08-Apr-08	8.28	81.9	142.0	I	270	14.8	1099.0	8.0	85.0	155.4	0.0160	2.03	0.01	0.08	2.060	2.122	669	389.3	0.348	0.437	123	
Cottonwood Creek	OK620910-04-0010D	40244	12-May-08	6.04	66.9	193.0	I	205	19.9	806.0	7.8	56.8	102.8	0.0106	1.31	0.01	0.08	1.335	1.402	499	337.0	0.296	0.350	196	
Cottonwood Creek	OK620910-04-0010D	40486	17-Jun-08	7.29	86.2	772.0	I	97	22.7	264.6	7.9	16.5	13.7	0.0106	0.33	0.01	0.60	0.355	0.944	261	124.0	0.291	0.607	820	
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	6.29	78.4	61.7	I	245	26.6	1108.0	8.1														50.24
Cottonwood Creek	OK620910-04-0010D	40933	22-Jul-08	8.38	112.7	29.0	I	229	31.3	1186.0	8.1	137.4	168.0	0.0106	5.56	0.01	0.77	5.585	6.344	727	354.0	1.303	1.287	46	
Cottonwood Creek	OK620910-04-0010D	41222	25-Aug-08	6.69	85.2	78.9	I	189	27.4	896.0	7.4	96.7	115.3	0.0106	2.08	0.01	0.97	2.105	3.064	551	280.0	0.571	0.614	60	
Cottonwood Creek	OK620910-04-0010D	41568	29-Sep-08	7.81	90.5	19.8	O	210	22.9	1120.0	8.1	116.6	158.1	0.0106	5.45	0.01	0.19	5.475	5.654	703	240.0	1.535	1.552	15	32.47
Cottonwood Creek	OK620910-04-0010D	42010	03-Nov-08	9.15	91.9	22.3	O	205	15.6	1165.0	8.1	120.8	170.7	0.0106	6.11	0.01	0.67	6.135	6.794	716	368.0	1.755	1.529	15	17.86
Cottonwood Creek	OK620910-04-0010D	42294	16-Dec-08	12.61	93.2	15.9	O	226	2.9		8.3	117.2	186.2	0.0106	5.91	0.01	0.62	5.935	6.544	764	460.0	1.178	1.440	7	
Cottonwood Creek	OK620910-04-0010D	42778	03-Feb-09	13.66	109.5	12.9		244	5.9	1305.0	8.5	182.1	236.7	0.0106	3.30	0.07	0.51	3.381	3.880	781	498.0	0.947	1.003	7	
Cottonwood Creek	OK620910-04-0010D	42987	02-Mar-09	7.86	67.4	8.5	O	260	8.2	1222.0	8.3	127.6	203.1	0.0106	3.37	0.01	0.44	3.395	3.824	780	656.0	0.881	0.889	7	
Cottonwood Creek	OK620910-04-0010D	43301	07-Apr-09	10.38	97.4	32.6	O	380	12.5	1147.0	8.2	102.3	175.0	0.0106	2.85	0.01	0.72	2.875	3.584	688	266.0	0.544	0.661	37	
Council Creek	OK620900-02-0050H	37166	18-May-07	7.59	81.3	9.2	O	205	18.7	682.0	7.9														5.44
Council Creek	OK620900-02-0050H	37157	19-May-07	7.72	86.6	222.0	I	111	20.9	227.7	6.6	14.6	11.1	0.0106	0.15	0.01	1.28	0.175	1.444	242	116.5	0.078	0.204	161	86.68
Council Creek	OK620900-02-0050H	37338	25-Jun-07	6.79	83.7	13.0	O	208	26.1	552.0	8.1	43.3	21.9	0.0106	0.10	0.01	0.08	0.125	0.192	330	234.8	0.016	0.054	7	10.10
Council Creek	OK620900-02-0050H	37988	07-Aug-07	5.92	73.5	8.0	O	316	26.6		8.0	104.2	44.7	0.0106	0.01	0.01	0.48	0.039	0.508	636	440.3	0.004	0.038	7	3.06
Council Creek	OK620900-02-0050H	38270	10-Sep-07	6.96	83.4	68.8	I	112	24.4		7.4	22.3	14.4	0.0106	0.20	0.01	0.60	0.225	0.814	211	138.2	0.043	0.114	59	28.28
Council Creek	OK620900-02-0050H	38770	09-Oct-07	7.37	77.5	5.7	O	102	17.7	1228.0	8.0														2.15
Council Creek	OK620900-02-0050H	38426	15-Oct-07	7.64	81.2	9.3	O	365	18.3	1105.0		119.8	38.9	0.0106	0.09	0.30	0.26	0.401	0.650	292	441.7	0.004	0.046	10	3.36
Council Creek	OK620900-02-0050H	38556	13-Nov-07	7.64	74.4	5.7	O	270	14.2	769.0		75.1	27.0	0.0106	0.01	0.17	0.41	0.195	0.594	459	318.5	0.010	0.049	7	1.53
Council Creek	OK620900-02-0050H	38714	17-Dec-07	12.79	93.6	52.8	I	145	2.5	481.5	7.4	50.3	19.1	0.0106	0.50	0.01	0.08	0.525	0.592	304	175.8	0.045	0.097	7	6.65
Council Creek	OK620900-02-0050H	39190	22-Jan-08	14.95	103.6	5.2	O	988	0.5	463.0	8.2	110.6	39.7	0.0106	0.14	0.01	0.12	0.165	0.274	564	415.4	0.015	0.021	7	3.11
Council Creek	OK620900-02-0050H	39648	03-Mar-08	4.71	82.4	805.0	I	68	8.2	167.8	7.5	16.4	15.7	0.1130	0.55	0.01	1.60	0.677	2.164	233	69.6	0.176	0.520	1060	
Council Creek	OK620900-02-0050H	39943	07-Apr-08	9.41	93.3	16.0	O	273	15.0	513.0	8.2	71.9	32.0	0.0106	0.01	0.01	0.12	0.039	0.148	447	325.4	0.009	0.026	7	16.52
Council Creek	OK620900-02-0050H	40269	12-May-08	9.04	92.6	16.5	O	213	16.4	585.0	7.9	46.7	22.8	0.0106	0.22	0.01	0.08	0.245	0.312	344	273.2	0.016	0.052	10	11.76
Council Creek	OK620900-02-0050H	40493	17-Jun-08	7.38	83.5	522.0	I	170	21.7	391.2	7.9	37.0	16.9	0.0106	0.21	0.01	0.79	0.235	1.014	300	200.0	0.112	0.354	569	
Council Creek	OK620900-02-0050H	40951	22-Jul-08	6.54	80.5	8.0	O	227	25.9	558.0	7.8	59.7	18.9	0.0106	0.15	0.01	0.55	0.175	0.714	375	254.0	0.009	0.036	7	1.93
Council Creek	OK620900-02-0050H	41240	26-Aug-08	7.07	79.4	6.2	O	337	20.9	1004.0	7.9	125.7	26.8	0.0106	0.18	0.01	0.08	0.205	0.272	586	378.0	0.004	0.033	7	0.45
Council Creek	OK620900-02-0050H	41583	30-Sep-08	7.63	77.5	5.0	O	206	16.2	741.0	7.8	59.9	18.7	0.0106	0.21	0.01	0.11	0.235	0.334	380	325.0	0.006	0.038	7	0.61
Council Creek	OK620900-02-0050H	42025	03-Nov-08	6.72	66.0	2.5	O	312	14.8	862.0	7.7	91.1	22.6	0.0106	0.01	0.01	0.53	0.039	0.558	466	347.0	0.008	0.036	7	0.66
Council Creek	OK620900-02-0050H	42301	15-Dec-08	12.85	92.5	4.1	O	322	1.9	536.0	8.3	81.3	31.4	0.0106	0.01	0.01	0.41	0.039	0.438	526	426.0	0.008	0.041	7	0.98
Council Creek	OK620900-02-0050H	42780	02-Feb-09	12.88	92.6	3.5	O	319	2.2	534.0	8.3	101.1	39.9	0.0106	0.13	0.03	0.27	0.171	0.430	506	392.0	0.012	0.033	7	2.63
Council Creek	OK620900-02-0050H	43000	02-Mar-09	11.29	89.3	4.5	O	316	5.3	842.0	8.3	81.9	35.4	0.0106	0.04	0.01	0.35	0.065	0.404	477	363.0	0.008	0.045	7	2.62
Council Creek	OK620900-02-0050H	43362	14-Apr-09	10.49	91.5	77.8	I	107	9.4	264.7	7.8	16.8	10.1	0.0150	0.12	0.01	1.39	0.149	1.524	210	181.0	0.033	0.142	25	
Crooked Creek Beaver	OK620930-00-0100G	37192	04-Jun-07	10.46	136.2	1.2	O	178	29.0	4500.0	8.3	1121.6	188.7	0.0106	0.01	0.01	0.22	0.039	0.248	2455	419.3	0.033	0.048	7	11.53
Crooked Creek Beaver	OK620930-00-0100G	37728	09-Jul-07	9.26	125.7	3.5	O	219	31.4	4487.0	8.3	1084.2	176.9	0.0106	0.18	0.01	0.62	0.205	0.814	2502	461.8	0.026	0.079	7	6.02
Crooked Creek Beaver	OK620930-00-0100G	38089	02-Aug-07	7.09	82.4	66.3	I	202	22.9	4398.0	7.9														3.97
Crooked Creek Beaver	OK620930-00-0100G	37976	06-Aug-07	8.79	125.7	55.2	I	195	34.6	4457.0	8.3	118.3	181.1	0.0106	0.01	0.01	0.98	0.039	1.008	2481	463.3	0.045	0.141	84	2.73
Crooked Creek Beaver	OK620930-00-0100G	38301	10-Sep-07	8.69	93.2	4.9	O	236	18.8	3866.0	8.1	959.9	184.4	0.0106	0.17	0.01	0.30	0.195	0.484	2100	480.8	0.025	0.032	7	0.00
Crooked Creek Beaver	OK620930-00-0100G	38467	22-Oct-07	11.31	112.6	3.4	O	222	15.3	4299.0	8.4	1247.5	201.7	0.0106	0.38	0.01	0.20	0.405	0.594	2611	517.0	0.004	0.024	7	0.00
Crooked Creek Beaver	OK620930-00-0100G	38622	26-Nov-07	12.68	93.9	10.0	O	222	3.1	3529.0	8.3	1352.7	172.3	0.0106	0.19	0.01	0.33	0.215	0.534	2647	525.1	0.013	0.017	7	
Crooked Creek Beaver	OK620930-00-0100G	39123	07-Jan-08	7.81	70.6	11.6	I	216	10.8	4061.0	8.2	1486.5	276.4	0.0106	0.78	0.01	0.38	0.805	1.174	2629	489.1	0.005	0.040	15	16.71
Crooked Creek Beaver	OK620930-00-0100G	39458	04-Feb-08	11.85	113.3	10.5	I	215	13.2	3675.0	8.5	1602.0	194.4	0.0106	0.43	0.01	0.16	0.455	0.604	2681	466.1	0.011	0.027	16	6.87
Crooked Creek Beaver	OK620930-00-0100G	39725	10-Mar-08	10.73	111.1	13.7	O	214	17.1	4108.0	8.4	1166.4	201.6	0.0106	0.18	0.01	0.15	0.205	0.344	2605	466.4	0.017	0.036	21	7.07

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Crooked Creek Beaver	OK620930-00-0100G	40047	14-Apr-08	12.62	138.0	4.8	I	211	19.7	4150.0	8.4	1235.1	188.4	0.0106	0.07	0.01	0.29	0.095	0.374	2605	472.2	0.009	0.017	13	4.91
Crooked Creek Beaver	OK620930-00-0100G	40254	12-May-08	9.15	109.2	5.4	O	224	24.2	4531.0	8.3	1247.0	252.8	0.0106	0.01	0.01	0.26	0.039	0.288	2527	522.7	0.010	0.020	7	11.83
Crooked Creek Beaver	OK620930-00-0100G	40502	16-Jun-08	9.60	115.3	12.0	O	210	24.4	4408.0	8.1	1367.5	237.9	0.0106	0.01	0.01	1.71	0.039	1.738	2477	392.0	0.181	0.376	25	
Crooked Creek Beaver	OK620930-00-0100G	40939	21-Jul-08	5.00	70.9	19.1	I	183	34.0	4448.0	8.4	1396.7	179.6	0.0106	0.01	0.01	0.90	0.039	0.928	2504	405.0	0.015	0.106	32	
Crooked Creek Beaver	OK620930-00-0100G	41249	25-Aug-08	7.33	92.1	23.3	I	192	27.1	4000.0	8.0	1250.1	164.3	0.0106	0.01	0.01	0.23	0.039	0.258	2212	388.0	0.037	0.085	33	10.62
Crooked Creek Beaver	OK620930-00-0100G	41590	29-Sep-08	7.73	92.8	7.5	O	212	24.6	4053.0	8.4	1134.1	231.9	0.0106	0.01	0.01	0.15	0.039	0.178	2630	465.0	0.012	0.037	7	
Crooked Creek Beaver	OK620930-00-0100G	42002	03-Nov-08	11.17	116.9	5.4	O	231	17.6	3330.0	8.2	1220.1	244.5	0.0106	0.01	0.01	0.37	0.039	0.398	2533	510.0	0.012	0.025	7	0.00
Crooked Creek Beaver	OK620930-00-0100G	42384	29-Dec-08	12.69	103.9	2.0	O	231	6.8	2007.0	8.3	1441.1	277.3	0.0106	0.31	0.01	0.38	0.335	0.704	2509	480.0	0.010	0.017	7	7.26
Crooked Creek Beaver	OK620930-00-0100G	42796	02-Feb-09	13.30	109.6	2.0	O	214	7.0	2142.0	8.4	1881.3	295.8	0.0106	0.01	0.01	0.25	0.039	0.278	2559	465.0	0.009	0.017	7	
Crooked Creek Beaver	OK620930-00-0100G	43061	09-Mar-09	13.26	130.5	1.6	O	215	14.6	2449.0	8.4	1400.2	186.9	0.0106	0.01	0.01	0.25	0.039	0.278	2551	455.0	0.005	0.058	7	2.70
Crooked Creek Beaver	OK620930-00-0100G	43308	06-Apr-09	10.97	104.3	1.0	O	219	13.1	2449.0	8.4	1227.2	165.3	0.0106	0.01	0.01	0.67	0.039	0.698	2423	455.0	0.010	0.096	7	
Crooked Creek Grant	OK621000-06-0010C	37218	05-Jun-07	7.66	95.6	87.9	I	28	27.6	878.0	7.9	84.3	101.0	0.0106	0.63	0.01	0.83	0.655	1.474	534	224.6	0.522	0.549	36	16.01
Crooked Creek Grant	OK621000-06-0010C	37824	09-Jul-07	7.82	94.9	19.6	O	343	25.6	1552.0		141.3	201.5	0.0106	1.14	0.01	0.89	1.165	2.044	949	448.4	0.267	0.318	16	25.98
Crooked Creek Grant	OK621000-06-0010C	38012	06-Aug-07	7.70	96.5	12.4	I	347	28.1	1520.0	8.2	184.4	158.0	0.0580	1.09	0.07	0.72	1.218	1.880	874	387.8	0.103	0.169	15	5.80
Crooked Creek Grant	OK621000-06-0010C	38096	09-Aug-07	6.67	84.4	16.0	O	355	27.5	1336.0	8.1														8.32
Crooked Creek Grant	OK621000-06-0010C	38315	18-Sep-07	6.59	75.9	37.7	O	337	22.5		8.2	131.4	86.2	0.0160	1.27	0.01	0.62	1.300	1.904	635	307.6	0.061	0.114	12	
Crooked Creek Grant	OK621000-06-0010C	38460	23-Oct-07	8.38	79.1	201.0	I	201	12.9		8.0	65.3	72.3	0.0400	1.65	0.32	0.78	2.010	2.750	523	226.6	0.278	0.386	104	4.66
Crooked Creek Grant	OK621000-06-0010C	38617	27-Nov-07	16.16	132.8	6.8	O	369	7.1	1187.0	8.7	406.6	167.5	0.0106	1.20	0.01	0.26	1.225	1.474	676	331.7	0.021	0.044	7	4.19
Crooked Creek Grant	OK621000-06-0010C	39116	08-Jan-08	16.43	139.9	19.8	O	312	8.4	1285.0	8.3	502.8	239.1	0.0106	0.75	0.01	1.27	0.775	2.034	955	404.9	0.010	0.165	33	
Crooked Creek Grant	OK621000-06-0010C	39451	05-Feb-08	11.00	89.1	31.5	O	330	6.5	1500.0	8.6	445.0	205.6	0.0106	1.02	0.01	0.70	1.045	1.734	886	352.0	0.032	0.121	48	4.54
Crooked Creek Grant	OK621000-06-0010C	39716	11-Mar-08	9.37	82.9	71.9	I	239	8.3	1563.0	8.3	169.7	223.9	0.0220	1.47	0.03	0.65	1.522	2.150	959	382.1	0.110	0.200	38	
Crooked Creek Grant	OK621000-06-0010C	40040	15-Apr-08	10.87	109.7	116.0	I	241	15.8	1289.0	8.1	294.2	257.1	0.1340	1.13	0.01	1.41	1.278	2.554	848	341.1	0.264	0.338	70	14.11
Crooked Creek Grant	OK621000-06-0010C	40309	20-May-08	6.05	70.6	52.7	I	307	23.5	1603.0	8.2	359.0	203.8	0.0690	1.14	0.01	1.14	1.223	2.294	983	426.2	0.164	0.230	61	5.01
Crooked Creek Grant	OK621000-06-0010C	40548	24-Jun-08	8.16	102.0	39.6	I	358	26.9	1520.0	8.2	396.2	332.4	0.0106	1.04	0.01	1.04	1.065	2.094	1126	500.0	0.331	0.383	37	29.69
Crooked Creek Grant	OK621000-06-0010C	41005	29-Jul-08	7.66	94.6	25.5	O	328	26.2	1444.0	8.1	507.6	176.2	0.1490	0.91	0.01	0.63	1.073	1.554	835	315.0	0.140	0.223	30	
Crooked Creek Grant	OK621000-06-0010C	41394	03-Sep-08			11.5	O	329	20.0	1209.0		166.4	91.4	0.0440	0.91	0.01	0.47	0.968	1.394	688	350.0	0.053	0.096	7	1.55
Crooked Creek Grant	OK621000-06-0010C	41846	20-Oct-08	8.36	83.1	32.5	I	366	15.1	1644.0	8.1	106.3	115.1	0.0106	1.22	0.01	0.11	1.245	1.344	598	542.0	0.129	0.191	45	
Crooked Creek Grant	OK621000-06-0010C	42085	18-Nov-08	12.57	109.3	4.9	O	432	9.2	1325.0		237.5	305.9	0.0106	1.21	0.01	0.70	1.235	1.924	1156	576.0	0.067	0.099	7	42.04
Crooked Creek Grant	OK621000-06-0010C	42372	30-Dec-08	17.50	142.5	3.6	O	411	6.3	2119.0	8.4	228.5	385.4	0.0106	0.84	0.01	0.83	0.865	1.684	1308		0.015	0.048	7	32.28
Crooked Creek Grant	OK621000-06-0010C	42836	10-Feb-09	13.82	124.4	9.0	O	391	11.1	1368.0	8.1	228.6	314.9	0.0106	0.79	0.01	0.73	0.815	1.534	1085	490.0	0.030	0.095	7	26.13
Crooked Creek Grant	OK621000-06-0010C	43042	09-Mar-09	8.37	76.8	7.4	O	405	11.5	2064.0	8.3	268.2	430.2	0.0750	0.79	0.01	1.11	0.879	1.914	1242	562.0	0.054	0.183	30	
Crooked Creek Grant	OK621000-06-0010C	43359	14-Apr-09	9.26	88.7	48.9	I	304	13.9	2692.0	8.1	443.6	590.4	0.1020	0.55	0.01	2.07	0.666	2.634	1701	650.0	0.102	0.309	65	
Dead Indian Creek	OK620910-05-0080D	37126	29-May-07	7.63	84.1	9.7	I	305	20.1	2830.0	8.0	295.6	779.5	0.0106	0.85	0.01	1.03	0.875	1.894	2081	1067.9	0.123	0.174	24	4.82
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	7.01	80.6	21.1	I	320	22.5	2290.0	7.8														6.13
Dead Indian Creek	OK620910-05-0080D	37315	25-Jun-07	6.52	79.9	235.0	I	162	25.7	1089.0	7.6	85.8	244.8	0.0480	0.52	0.01	1.26	0.582	1.794	834	397.3	0.480	0.644	139	32.60
Dead Indian Creek	OK620910-05-0080D	37797	31-Jul-07	5.30	64.5	812.0	I	249	25.0	3376.0	7.5	363.9	977.2	0.1660	1.01	0.01	2.20	1.190	3.224	2593	1289.1	0.542	1.002	800	
Dead Indian Creek	OK620910-05-0080D	38333	18-Sep-07	7.38	83.4	4.1	O	316	21.3	2587.0	7.9	290.1	748.2	0.0106	0.92	0.01	0.57	0.945	1.504	1795	942.6	0.087	0.116	7	60.68
Dead Indian Creek	OK620910-05-0080D	38401	16-Oct-07	8.24	82.6	175.0	I	152	15.5	2109.0	7.8	190.4	559.9	0.1240	1.38	0.42	1.34	1.924	3.140	1478	730.0	0.185	0.309	116	5.75
Dead Indian Creek	OK620910-05-0080D	38548	14-Nov-07	7.68	74.4	4.5	I	313	13.9	2743.0	8.0	254.0	698.0	0.0106	0.96	0.01	0.43	0.985	1.404	1942	995.4	0.051	0.076	7	5.77
Dead Indian Creek	OK620910-05-0080D	38694	17-Dec-07	12.07	87.2	4.5	I	32	1.9		8.0	243.8	710.5	0.0106	1.88	0.01	0.59	1.905	2.484	1993	1084.6	0.062	0.098	7	9.37
Dead Indian Creek	OK620910-05-0080D	39174	23-Jan-08	13.35	91.7	3.5		323	0.1		8.1	266.8	765.8	0.0106	2.01	0.01	0.41	2.035	2.434	2091	1041.2	0.032	0.049	7	5.05
Dead Indian Creek	OK620910-05-0080D	39632	04-Mar-08	11.93	92.7	13.7	I	325	4.7	2916.0	8.2	346.6	1017.0	0.0106	1.15	0.01	0.53	1.175	1.694	2279	1133.0	0.074	0.108	13	24.26
Dead Indian Creek	OK620910-05-0080D	39919	08-Apr-08	8.10	78.1	101.0	I	207	13.7	2435.0	8.0	240.4	688.0	0.0220	0.46	0.01	1.34	0.496	1.814	1714	833.7	0.080	0.214	133	29.29
Dead Indian Creek	OK620910-05-0080D	40234	13-May-08	8.82	91.6	31.8	I	332	17.2	2175.0		186.9	504.5	0.0106	1.45	0.01	0.70	1.475	2.164	1480	946.9	0.201	0.243	23	8.01
Dead Indian Creek	OK620910-05-0080D	40472	17-Jun-08	6.83	76.5	81.7	I	300	20.9	1919.0	7.7	186.0	493.4	0.0106	1.06	0.01	0.52	1.085	1.594	1477	709.0	0.246	0.286	58	
Dead Indian Creek	OK620910-05-0080D	40919	22-Jul-08	5.78	69.6	20.9	O	296	24.6	1823.0	7.9	172.9	421.8	0.0380	1.22	0.01	0.67	1.272	1.904	1220	611.0	0.228	0.280	26	1.67
Dead Indian Creek	OK620910-05-0080D	41213	26-Aug-08	6.96	79.2	15.1	O	260	21.7	1634.0	8.0	156.5	493.6	0.0220	1.07	0.01	0.52	1.106	1.604	1398	740.0	0.234	0.258	13	4.97
Dead Indian Creek	OK620910-05-0080D	41560	30-Sep-08	6.19	63.7	6.7	O	276	16.7	2274.0	7.9	189.1	573.8	0.0380	1.28	0.01	0.17	1.332	1.464	1578	800.0	0.135	0.182	7	2.62
Dead Indian Creek	OK620910-05-0080D	41993	04-Nov-08	6.24	60.5	4.8	O	281	13.9	2314.0	7.8	320.2	884.7	0.0106	1.29	0.01	0.46	1.315	1.764	1664	910.0	0.075	0.112	7	1.08
Dead Indian Creek	OK620910-05-0080D	42283	16-Dec-08	12.79	88.9	7.0	O	354	0.6		7.9	193.3	647.7	0.0106	1.37	0.01	0.34	1.395	1.724	1749	993.0	0.014	0.023	7	6.23
Dead Indian Creek	OK620910-05-0080D	42764	03-Feb-09	12.59	92.6	8.7	O	292	2.6	2498.0	8.1	239.1	969.0	0.0106	1.13	0.52	0.41	1.661	2.060	1831	1004.0	0.014	0.033	7	3.59

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Dead Indian Creek	OK620910-05-0080D	42979	03-Mar-09	11.45	89.5	6.6	O	265	4.9	2264.0	8.1	226.3	879.8	0.0106	0.76	0.01	0.39	0.785	1.164	1733	885.0	0.031	0.066	7	3.83
Dead Indian Creek	OK620910-05-0080D	43287	07-Apr-09	9.93	79.9	12.1	O	312	4.2	2236.0	8.1	208.7	697.0	0.0580	1.25	0.01	0.08	1.322	1.342	1660	855.0	0.112	0.175	7	
Deep Creek	OK620910-02-0250C	37135	30-May-07	3.27	35.8	356.0	I	92	22.3	307.4	7.2	36.7	143.8	0.1180	0.89	0.07	2.08	1.078	3.040	464	234.6	0.688	0.893	309	
Deep Creek	OK620910-02-0250C	37308	25-Jun-07	6.60	79.1	56.2	I	160	24.4	1263.0	7.8	51.5	430.9	0.0106	0.52	0.01	0.81	0.545	1.344	947	572.5	0.235	0.291	50	17.06
Deep Creek	OK620910-02-0250C	37792	30-Jul-07	6.65	82.2	11.6	I	224	26.1	2650.0	7.7	104.0	1068.1	0.0106	1.30	0.01	0.29	1.325	1.604	2219	1416.5	0.010	0.052	17	5.57
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	8.05	102.0	14.6	I	287	28.5	2310.0	7.8														7.09
Deep Creek	OK620910-02-0250C	38329	17-Sep-07	9.56	112.8	7.7	I	260	23.5	2282.0	7.9	123.5	1136.6	0.0106	1.79	0.01	0.50	1.815	2.304	1834	1160.9	0.040	0.066	11	9.14
Deep Creek	OK620910-02-0250C	38395	15-Oct-07	6.17	63.4	225.0	I	205	16.4	2180.0	7.9	104.0	919.8	0.0106	1.21	0.29	0.79	1.511	2.290	1936	1161.1	0.096	0.311	235	29.67
Deep Creek	OK620910-02-0250C	38543	13-Nov-07	10.73	108.5	26.8	O	250	15.8	1208.0	8.1	926.9	1104.3	0.0106	1.32	0.01	0.59	1.345	1.924	2026	1286.1	0.016	0.065	25	3.89
Deep Creek	OK620910-02-0250C	38700	18-Dec-07	12.36	91.8	9.2	I	290	3.0	2579.0	8.1	813.6	1072.1	0.0106	2.68	0.01	0.66	2.705	3.354	2017	1347.7	0.086	0.117	7	5.95
Deep Creek	OK620910-02-0250C	39168	22-Jan-08	13.21	90.7	8.5	I	250	0.1		8.0	836.2	1201.6	0.0106	2.55	0.01	0.30	2.575	2.864	2276	1319.8	0.017	0.034	11	13.19
Deep Creek	OK620910-02-0250C	39626	03-Mar-08	8.63	69.7	1000.0	I	213	6.2	760.0	8.0	497.9	371.8	0.4750	1.15	0.01	3.40	1.639	4.564	849	372.5	0.743	1.377	1403	
Deep Creek	OK620910-02-0250C	39913	07-Apr-08	8.63	82.2	18.1	I	236	13.3	2696.0	8.0	490.3	1180.1	0.0106	1.18	0.01	0.53	1.205	1.724	2200	1628.4	0.019	0.042	18	10.74
Deep Creek	OK620910-02-0250C	40228	12-May-08	8.87	89.0	38.4	I	265	15.6	2605.0	8.0	387.1	1020.8	0.0106	1.46	0.01	0.41	1.485	1.884	2147	1491.1	0.041	0.082	44	7.63
Deep Creek	OK620910-02-0250C	40466	16-Jun-08	8.12	95.5	34.3	I	295	23.6	1541.0	7.7	366.4	1105.1	0.0106	1.14	0.01	1.21	1.165	2.364	2049	1231.0	0.087	0.129	32	32.76
Deep Creek	OK620910-02-0250C	40913	21-Jul-08	9.58	118.3	19.2	O	232	26.3	1723.0	8.0	356.9	837.0	0.0106	0.83	0.01	0.73	0.855	1.574	1673	995.0	0.013	0.093	26	213.38
Deep Creek	OK620910-02-0250C	41207	25-Aug-08	8.71	105.2	14.5	O	220	24.9	1924.0	8.0	473.6	863.3	0.0106	0.93	0.01	0.34	0.955	1.284	1651	995.0	0.011	0.059	16	2.45
Deep Creek	OK620910-02-0250C	41554	29-Sep-08	7.66	84.2	13.8	O	247	20.0	2241.0	8.0	831.9	900.7	0.0106	0.99	0.01	0.08	1.015	1.082	1781	1064.0	0.004	0.050	17	2.22
Deep Creek	OK620910-02-0250C	41987	03-Nov-08	9.66	94.0	11.5	O	292	14.1	2660.0	8.1	813.9	1124.3	0.0106	1.50	0.01	0.52	1.525	2.034	2291	1370.0	0.011	0.039	12	3.10
Deep Creek	OK620910-02-0250C	42277	15-Dec-08	13.90	96.5	2.7	O	324	0.6		8.2	861.0	1260.5	0.0106	1.74	0.01	0.39	1.765	2.144	2330	1575.0	0.009	0.013	7	1.40
Deep Creek	OK620910-02-0250C	42758	02-Feb-09	14.38	110.2	6.5	O	274	4.2	2786.0	8.2	631.3	1225.0	0.0106	1.82	0.01	0.37	1.845	2.204	2283	1360.0	0.008	0.029	7	2.49
Deep Creek	OK620910-02-0250C	42973	02-Mar-09	13.02	98.2	8.8		289	3.8	2342.0	8.2	957.4	1315.7	0.0106	1.77	0.01	0.46	1.795	2.244	2205	1282.0	0.010	0.046	7	2.47
Deep Creek	OK620910-02-0250C	43281	06-Apr-09	10.70	85.6	9.6	O	247	5.7	2537.0	8.3	891.0	1601.7	0.0106	1.12	0.01	0.78	1.145	1.914	2261	1265.0	0.011	0.210	15	
Deer Creek	OK621000-04-0010D	37149	29-May-07	6.73	75.5	385.0	I	156	20.9	465.0	7.8	54.5	30.0	0.0106	0.67	0.01	1.37	0.695	2.054	233	139.9	0.282	0.426	311	15.50
Deer Creek	OK621000-04-0010D	37330	25-Jun-07	7.01	79.3	83.6	I	292	27.1	1513.0	8.3	243.6	99.3	0.0106	0.01	0.01	1.07	0.039	1.098	882	453.7	0.057	0.142	65	4.53
Deer Creek	OK621000-04-0010D	37814	30-Jul-07	8.00	102.8	20.3	I	224	28.3	1982.0	8.0	369.0	141.4	0.0106	0.01	0.01	0.86	0.039	0.888	1124	503.3	0.015	0.117	40	1.51
Deer Creek	OK621000-04-0010D	38262	10-Sep-07	5.97	71.0	120.0	I	164	24.0	1013.0	7.7	159.1	85.8	0.0220	1.03	0.01	1.32	1.066	2.364	586	271.9	0.194	0.310	104	10.09
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	5.95	68.7	58.4	I	263	22.4	2134.0	7.8														4.79
Deer Creek	OK621000-04-0010D	38418	15-Oct-07	6.15	64.9	1000.0		114	18.2	871.0	7.9	157.3	83.3	0.0160	0.67	0.36	3.86	1.046	4.890	580	261.6	0.815	1.667	2655	
Deer Creek	OK621000-04-0010D	38564	13-Nov-07	9.20	90.4	14.1	O	272	14.6	2027.0	6.2	368.3	131.0	0.0106	0.51	0.01	0.62	0.535	1.144	1157	622.5	0.036	0.093	11	10.96
Deer Creek	OK621000-04-0010D	38706	17-Dec-07	12.57	86.4	21.7	I	220	0.2	1818.0	8.0	209.3	84.1	0.0106	2.19	0.01	0.64	2.215	2.844	689	383.4	0.117	0.168	7	18.39
Deer Creek	OK621000-04-0010D	39199	22-Jan-08	13.86	97.0	9.6	I	291	0.6	1873.0	6.9	307.3	126.1	0.0106	1.85	0.01	0.25	1.875	2.114	1033	518.5	0.030	0.040	7	1.53
Deer Creek	OK621000-04-0010D	39657	03-Mar-08	9.55	80.9	481.0	I	241	8.1	1479.0	7.3	196.0	95.8	0.0550	1.52	0.01	1.80	1.589	3.334	822	442.4	0.114	0.468	880	
Deer Creek	OK621000-04-0010D	39939	07-Apr-08	12.28	117.2	36.7	I	217	13.2	1669.0	8.3	319.2	137.1	0.0106	0.54	0.01	0.73	0.565	1.284	930	532.8	0.013	0.086	35	13.55
Deer Creek	OK621000-04-0010D	40262	12-May-08	7.56	77.0	115.0	I	170	16.2	856.0	7.9	127.4	46.3	0.0840	1.11	0.01	1.02	1.208	2.144	558	266.2	0.156	0.236	61	41.44
Deer Creek	OK621000-04-0010D	41230	25-Aug-08	6.47	77.3	37.7	I	239	24.3	2138.0	7.5	438.8	164.6	0.0106	0.01	0.01	1.08	0.039	1.108	1197	519.0	0.024	0.134	49	1.30
Deer Creek	OK621000-04-0010D	42071	18-Nov-08	10.60	86.4	8.1	O	328	6.6	1676.0	8.1	280.0	109.5	0.0106	0.88	0.01	0.61	0.905	1.504	957	674.0	0.069	0.105	7	14.90
Deer Creek	OK621000-04-0010D	42358	30-Dec-08	12.53	92.6	25.9	I	365	2.8	1541.0	8.1	268.6	117.8	0.0106	1.50	0.01	0.63	1.525	2.144	864	550.0	0.037	0.093	12	22.33
Deer Creek	OK621000-04-0010D	42822	10-Feb-09	8.95	78.8	14.6	O	324	9.7	1991.0	7.9	515.4	155.7	0.0106	0.65	0.14	0.76	0.801	1.550	1148	622.0	0.014	0.093	24	31.57
Deer Creek	OK621000-04-0010D	43031	10-Mar-09	8.74	84.8	28.2	I	315	14.0	1730.0	7.9	417.2	178.4	0.0290	0.59	0.01	0.74	0.633	1.344	1037	536.0	0.015	0.103	42	4.07
Deer Creek	OK621000-04-0010D	43345	14-Apr-09	9.95	86.9	144.0	I	175	9.3	916.0	8.0	165.1	95.5	0.0106	1.33	0.16	0.39	1.501	1.880	601	350.0	0.126	0.237	67	
Doga Creek	OK621200-02-0020C	37161	30-May-07	6.90	78.9	58.8	I	96	21.6	255.2	7.5	6.8	7.0	0.0106	0.11	0.01	0.72	0.135	0.844	182	113.5	0.043	0.126	29	0.00
Doga Creek	OK621200-02-0020C	37342	26-Jun-07	7.93	98.6	15.6	O	211	26.1	479.5	7.8	19.4	15.9	0.0106	0.01	0.01	0.08	0.039	0.106	299	214.6	0.017	0.049	7	0.00
Doga Creek	OK621200-02-0020C	37983	06-Aug-07	6.28	81.3	14.1	O	268	28.7	716.0	7.8	47.5	137.6	0.0106	0.15	0.01	0.31	0.175	0.474	395	290.2	0.008	0.065	11	0.00
Doga Creek	OK621200-02-0020C	38274	11-Sep-07	4.48	52.4	48.6	I	134	23.0		6.7	16.0	12.3	0.0220	0.20	0.01	0.57	0.236	0.784	204	122.5	0.060	0.132	26	2.92
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	6.98	79.9	20.5	O	161	22.0	518.0	7.5					0.08									0.70
Doga Creek	OK621200-02-0020C	38429	16-Oct-07	7.17	74.9	7.0	O	265	17.5	413.9		23.3	19.3	0.0106	0.03	0.10	0.08	0.141	0.208	379	271.2	0.017	0.050	7	0.51
Doga Creek	OK621200-02-0020C	38559	14-Nov-07	8.83	85.8	4.9	O	244	14.0	447.7		18.0	17.5	0.0106	0.01		0.20	0.025	0.214	346	249.6	0.046	0.100	7	0.85
Doga Creek	OK621200-02-0020C	38717	18-Dec-07	12.23	90.9	11.5	I	261	3.0	622.0	7.9	27.2	19.8	0.0106	0.10	0.01	0.08	0.125	0.192	367	260.0	0.038	0.069	7	1.94
Doga Creek	OK621200-02-0020C	39194	23-Jan-08	14.85	108.5	5.4	O	297	2.5	716.0	8.0	42.6	24.3	0.0106	0.10	0.01	0.08	0.125	0.192	413	301.8	0.013	0.024	7	1.89
Doga Creek	OK621200-02-0020C	39652	04-Mar-08	10.66	84.2	254.0	I	87	5.3	141.4	7.1	13.1	13.0	0.0350	0.42	0.01	0.93	0.469	1.364	229	88.4	0.083	0.221	87	28.21

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Doga Creek	OK621200-02-0020C	39947	08-Apr-08	10.47	94.0	393.0	I	123	10.5	274.1	8.0	10.3	12.8	0.0230	0.22	0.01	0.55	0.257	0.784	183	114.1	0.138	0.367	725	
Doga Creek	OK621200-02-0020C	40273	13-May-08	8.11	86.0	41.5	I	214	18.5	502.0	7.7	20.0	17.1	0.0106	0.14	0.01	0.08	0.165	0.232	315	241.8	0.026	0.056	17	0.00
Doga Creek	OK621200-02-0020C	40946	22-Jul-08	7.59	97.5	12.1	I	184	28.5	525.0	7.6	34.2	21.9	0.0250	0.01	0.01	0.51	0.053	0.538	294	188.0	0.009	0.061	7	0.00
Doga Creek	OK621200-02-0020C	41235	26-Aug-08	7.51	89.3	10.8	O	154	23.9	574.0	7.8	23.9	23.6	0.0106	0.01	0.01	0.08	0.039	0.106	347	269.0	0.004	0.034	7	0.18
Doga Creek	OK621200-02-0020C	41577	29-Sep-08	8.11	94.1	71.6	I	140	22.7	776.0	7.6	123.0	34.9	0.0106	0.21	0.01	1.77	0.235	1.994	441	179.0	0.097	0.326	42	
Doga Creek	OK621200-02-0020C	42020	03-Nov-08	7.34	72.5	13.5	O	240	14.7	729.0	7.7	32.1	26.7	0.0106	0.01	0.01	0.29	0.039	0.318	418	378.0	0.043	0.077	7	3.65
Doga Creek	OK621200-02-0020C	42304	16-Dec-08	12.20	86.7	8.4		243	1.4	369.9	8.0	19.9	22.4	0.0106	0.01	0.01	0.28	0.039	0.308	394	329.0	0.018	0.050	7	0.16
Doga Creek	OK621200-02-0020C	42785	02-Feb-09	14.33	109.7	7.0	O	235	4.1	646.0	7.8	29.9	22.1	0.0106	0.01	0.01	0.13	0.039	0.158	388	408.0	0.010	0.035	7	0.14
Doga Creek	OK621200-02-0020C	42995	02-Mar-09	10.19	82.3	10.2	O	294	6.0	653.0	7.9	36.9	20.6	0.0106	0.01	0.01	0.19	0.039	0.218	386	344.0	0.012	0.066	7	
Doga Creek	OK621200-02-0020C	43367	13-Apr-09	9.85	87.4	513.0	I	143	10.1	273.9	7.8	13.4	9.4	0.0150	0.11	0.01	1.90	0.139	2.024	187	179.0	0.069	0.238	304	
Driftwood Creek	OK621010-03-0030C	37214	04-Jun-07	6.89	81.9	262.0	I	219	24.0	1631.0	7.7	39.8	531.0	0.0680	0.59	0.01	1.03	0.672	1.634	1242	833.0	0.307	0.402	241	
Driftwood Creek	OK621010-03-0030C	37829	10-Jul-07	5.70	68.8	71.7	I	364	24.9	235.0		83.8	796.8	0.0106	0.83	0.01	0.66	0.855	1.504	1897	1214.0	0.179	0.228	68	9.65
Driftwood Creek	OK621010-03-0030C	38016	06-Aug-07	10.48	139.1	57.1	I	281	30.2	2117.0	8.1	89.6	660.8	0.0106	0.10	0.01	0.73	0.125	0.844	1580	1065.1	0.031	0.132	78	12.55
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	9.75	122.7	83.8	I	285	27.1	1632.0	8.1														6.48
Driftwood Creek	OK621010-03-0030C	38311	18-Sep-07	5.78	65.4	135.0	I	324	21.4		7.8	116.1	617.8	0.0360	0.01	0.01	0.95	0.064	0.978	1404	908.7	0.070	0.196	124	2.73
Driftwood Creek	OK621010-03-0030C	38456	23-Oct-07	9.48	82.3	31.0	I	350	9.1		7.9	595.9	680.2	0.0106	0.30	0.01	0.66	0.325	0.974	1517	992.9	0.038	0.112	28	1.70
Driftwood Creek	OK621010-03-0030C	38613	27-Nov-07	10.97	80.0	14.3	O	405	2.4	1590.0	8.1	96.2	956.0	0.0106	0.09	0.20	0.46	0.301	0.750	1644	1172.8	0.031	0.059	12	5.72
Driftwood Creek	OK621010-03-0030C	39110	07-Jan-08	11.24	94.2	18.8	I	312	7.7	1876.0	8.0	94.8	683.0	0.0106	0.01	0.01	0.38	0.039	0.408	1497	1046.3	0.013	0.055	24	4.24
Driftwood Creek	OK621010-03-0030C	39444	04-Feb-08	11.32	91.4	14.6	I	277	6.2	1512.0	7.9	91.6	536.6	0.0106	0.23	0.01	0.12	0.255	0.364	1480	1030.8	0.020	0.031	7	16.35
Driftwood Creek	OK621010-03-0030C	39712	10-Mar-08	10.70	92.4	25.6	I	272	8.8	1605.0	9.0	80.5	685.4	0.0106	0.21	0.01	0.19	0.235	0.414	1469	961.4	0.025	0.064	21	
Driftwood Creek	OK621010-03-0030C	40036	15-Apr-08	10.56	100.2	40.7	I	305	12.8	2154.0	8.3	103.8	871.6	0.0580	0.34	0.01	0.82	0.412	1.174	1683	1193.8	0.076	0.129	44	9.78
Driftwood Creek	OK621010-03-0030C	40303	19-May-08	7.42	88.5	128.0	I	287	24.0	1785.0	7.9	92.0	641.5	0.0420	0.53	0.01	1.03	0.586	1.574	1524	1137.8	0.172	0.257	118	4.57
Driftwood Creek	OK621010-03-0030C	40542	23-Jun-08	9.30	118.9	72.0	I	234	28.3	1370.0	7.9	85.7	437.9	0.1050	0.29	0.01	0.47	0.409	0.774	985	344.0	0.148	0.265	76	3.48
Driftwood Creek	OK621010-03-0030C	40999	28-Jul-08	4.84	61.7	94.6	O	313	27.9	1942.0	7.8	186.7	527.0	0.0106	0.09	0.01	0.64	0.115	0.744	1549	850.0	0.085	0.170	76	
Driftwood Creek	OK621010-03-0030C	41388	02-Sep-08			36.4	O	290	25.6	2410.0		236.1	647.0	0.0190	0.01	0.01	0.57	0.047	0.598	1756	905.0	0.055	0.115	69	0.08
Driftwood Creek	OK621010-03-0030C	41777	07-Oct-08	3.54	37.5	829.0	I	88	17.9	654.0		77.8	230.1	0.1080	0.81	0.01	1.50	0.932	2.324	626	293.0	0.434	0.760	277	
Driftwood Creek	OK621010-03-0030C	42079	17-Nov-08	10.00	87.4	27.7	I	375	9.4	2217.0	8.0	121.5	783.7	0.0270	0.53	0.01	0.73	0.571	1.274	1723	1094.0	0.100	0.139	20	
Driftwood Creek	OK621010-03-0030C	42368	30-Dec-08	14.79	112.8	8.6	O	362	4.1	3319.0	8.2	134.1	984.2	0.0106	0.31	0.01	0.53	0.335	0.854	1777		0.012	0.040	7	9.60
Driftwood Creek	OK621010-03-0030C	42832	10-Feb-09	9.38	81.4	11.7	O	327	9.1	7440.0	7.9	134.9	1349.8	0.0106	0.07	0.01	0.80	0.095	0.884	1784	1215.0	0.014	0.067	7	8.01
Driftwood Creek	OK621010-03-0030C	43039	09-Mar-09	7.21	65.5	21.1	O	334	11.1	1028.0	8.1	109.3	1078.3	0.0450	0.17	0.01	0.68	0.229	0.864	1802	1228.0	0.029	0.110	32	6.64
Driftwood Creek	OK621010-03-0030C	43353	13-Apr-09	9.66	86.4	39.1	I	280	10.4	2410.0	8.2	102.9	1018.5	0.0790	0.33	0.01	1.21	0.423	1.554	1922	1312.0	0.042	0.362	40	
Duck Pond Creek	OK720500-02-0250F	37197	05-Jun-07	6.49	79.7	6.8	O	223	22.2	1256.0	7.6	200.9	49.9	0.0106	0.11	0.01	0.11	0.135	0.234	699	292.6	0.023	0.044	7	0.87
Duck Pond Creek	OK720500-02-0250F	37733	10-Jul-07	5.53	66.5	17.0	O	215	24.7	1227.0	7.5	197.3	50.2	0.0106	0.08	0.01	0.52	0.105	0.614	694	271.5	0.021	0.061	20	0.54
Duck Pond Creek	OK720500-02-0250F	37981	07-Aug-07	6.10	75.0	9.4	O	205	25.8	1150.0	7.8	196.8	43.6	0.0220	0.01	0.01	0.39	0.050	0.418	614	250.2	0.017	0.048	7	0.41
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	4.66	53.7	10.1	O	218	22.2	1098.0	7.1														0.16
Duck Pond Creek	OK720500-02-0250F	38299	10-Sep-07	7.84	87.0	11.1	O	217	20.4	1109.0	7.7	187.0	65.6	0.0106	0.01	0.01	0.34	0.039	0.368	606	273.3	0.014	0.051	14	0.24
Duck Pond Creek	OK720500-02-0250F	38465	22-Oct-07	10.91	100.3	3.6	O	221	11.6	1153.0	8.1	203.2	107.9	0.0106	0.08	0.42	0.19	0.511	0.690	634	294.2	0.011	0.025	7	
Duck Pond Creek	OK720500-02-0250F	38627	27-Nov-07	10.19	81.6	3.3	O	226	5.8	1336.0	8.1	203.1	135.5	0.0106	0.13	0.01	0.24	0.155	0.384	677	306.4	0.010	0.024	7	0.72
Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	10.09	88.6	6.7	O	204	9.6	1556.0	8.0	203.5	59.2	0.0106	0.04	0.01	0.17	0.065	0.224	623	287.4	0.010	0.036	7	0.94
Duck Pond Creek	OK720500-02-0250F	39456	04-Feb-08	11.49	100.2	4.5	O	215	9.3	1289.0	8.2	217.1	59.5	0.0106	0.11	0.01	0.11	0.135	0.234	646	282.9	0.008	0.028	7	1.12
Duck Pond Creek	OK720500-02-0250F	39723	10-Mar-08	9.13	84.3	6.9	O	206	11.7	1274.0	8.0	204.5	55.9	0.0106	0.09	0.01	0.15	0.115	0.254	641	283.1	0.012	0.030	12	0.77
Duck Pond Creek	OK720500-02-0250F	40045	14-Apr-08	11.22	109.0	5.6	O	212	14.0	1231.0	8.1	207.6	53.8	0.0106	0.01	0.01	0.37	0.039	0.398	641	275.7	0.014	0.023	7	0.74
Duck Pond Creek	OK720500-02-0250F	40252	12-May-08	10.10	106.6	7.2	O	197	17.9	1163.0	8.2	207.5	52.6	0.0106	0.01	0.01	0.15	0.039	0.178	625	301.4	0.011	0.021	7	0.52
Duck Pond Creek	OK720500-02-0250F	40500	16-Jun-08	7.61	89.4	4.1	O	196	24.4	1073.0	7.5	242.4	79.5	0.0106	0.01	0.01	0.58	0.039	0.608	612	230.0	0.018	0.064	7	0.00
Duck Pond Creek	OK720500-02-0250F	40937	21-Jul-08	9.94	123.1	13.2	O	213	26.3	1099.0	8.1	226.3	69.0	0.0106	0.01	0.01	0.49	0.039	0.518	600	260.0	0.017	0.055	16	0.20
Duck Pond Creek	OK720500-02-0250F	41247	25-Aug-08	4.25	51.1	25.4	I	176	24.6	800.0	7.5	128.9	26.6	0.0980	0.09	0.01	0.29	0.202	0.394	453	198.0	0.147	0.207	7	1.48
Duck Pond Creek	OK720500-02-0250F	41588	29-Sep-08	8.43	95.6	18.5	O	240	21.5	1240.0	8.0	205.0	62.3	0.0106	0.01	0.01	0.62	0.039	0.648	678	310.0	0.009	0.077	15	
Duck Pond Creek	OK720500-02-0250F	42000	03-Nov-08	11.25	113.0	5.6	O	220	15.6	1308.0	8.1	211.6	56.4	0.0106	0.01	0.01	0.36	0.039	0.388	675	285.0	0.008	0.021	7	0.87
Duck Pond Creek	OK720500-02-0250F	42382	29-Dec-08	12.64	104.3	2.0	O	217	7.0	1093.0	8.2	235.9	58.9	0.0106	0.01	0.01	0.41	0.039	0.438	677	310.0	0.007	0.025	7	0.92
Duck Pond Creek	OK720500-02-0250F	42794	02-Feb-09	15.65	126.1	3.1	O	201	6.1	1203.0	8.1	285.0	75.9	0.0106	0.05	0.03	0.34	0.091	0.420	676	260.0	0.014	0.024	7	
Duck Pond Creek	OK720500-02-0250F	43058	09-Mar-09	12.41	115.8	3.9	O	212	12.2	1173.0	8.2	233.9	59.3	0.0106	0.01	0.01	0.49	0.039	0.518	667	294.0	0.007	0.056	7	0.83

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissSolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Duck Pond Creek	OK720500-02-0250F	43305	06-Apr-09	13.12	116.8	3.2	O	197	10.2	1216.0	8.3	222.4	62.3	0.0106	0.01	0.01	0.56	0.039	0.588	685	256.0	0.020	0.110	7	
Dugout Creek	OK620900-03-0080C	37169	22-May-07	7.54	81.7	4.3	O	292	19.8	1054.0	8.1														495.56
Dugout Creek	OK620900-03-0080C	37142	29-May-07	8.12	9.4	143.0	I	117	22.5	416.1	7.8	34.7	11.3	0.0106	0.16	0.01	1.15	0.185	1.324	246	149.2	0.080	0.163	79	25.72
Dugout Creek	OK620900-03-0080C	37317	25-Jun-07	7.26	87.3	48.9	I	237	24.5	667.0	7.9	87.6	18.0	0.0106	0.26	0.01	0.64	0.285	0.914	482	278.9	0.028	0.071	26	12.06
Dugout Creek	OK620900-03-0080C	37807	31-Jul-07	6.68	80.8	143.0	I	167	25.1	525.0	7.6	46.2	15.4	0.0106	0.24	0.01	0.33	0.265	0.584	294	205.6	0.045	0.154	109	20.90
Dugout Creek	OK620900-03-0080C	38255	11-Sep-07	7.29	78.7	30.4	O	280	19.1	914.0	7.9	99.6	20.7	0.0106	0.26	0.01	0.51	0.285	0.784	508	328.8	0.040	0.093	35	3.66
Dugout Creek	OK620900-03-0080C	38405	15-Oct-07	6.34	72.7	57.3	I	311	17.7		7.8	108.6	20.9	0.0106	0.35	0.30	0.42	0.661	1.070	511	351.6	0.025	0.121	33	7.44
Dugout Creek	OK620900-03-0080C	38577	14-Nov-07	8.04	72.4	4.8	O	371	13.7	1175.0	8.1	133.3	26.3	0.0106	0.01	0.21	2.60	0.235	2.824	630	439.2	0.019	0.036	7	1.45
Dugout Creek	OK620900-03-0080C	38727	18-Dec-07	12.80	96.8	17.2	I	280	3.6	1040.0	8.3	101.0	23.9	0.0106	0.50	0.01	0.37	0.525	0.884	482	329.4	0.024	0.033	7	6.28
Dugout Creek	OK620900-03-0080C	39184	23-Jan-08	17.42	120.6	7.2		391	0.5			121.0	27.2	0.0106	0.34	0.01	0.15	0.365	0.504	588	403.9	0.013	0.026	11	
Dugout Creek	OK620900-03-0080C	39646	04-Mar-08	10.04	83.4	201.0	I	106	8.0	345.0	7.9	34.5	16.6	0.1160	0.76	0.01	0.72	0.890	1.494	271	131.5	0.100	0.237	79	17.98
Dugout Creek	OK620900-03-0080C	39931	08-Apr-08	7.82	75.3	754.0	I	189	13.6	788.0	8.0	59.4	19.6	0.0410	0.27	0.01	1.02	0.325	1.304	431	281.3	0.069	0.356	752	113.89
Dugout Creek	OK620900-03-0080C	40245	13-May-08	8.88	93.9	20.1	I	312	18.1	929.0	7.9	109.7	25.7	0.0106	0.31	0.01	0.19	0.335	0.514	524	415.2	0.030	0.049	22	6.11
Dugout Creek	OK620900-03-0080C	40482	17-Jun-08	7.51	84.9	95.7	I	250	21.3	741.0	8.1	137.6	17.6	0.0106	0.26	0.01	0.66	0.285	0.934	507	304.0	0.045	0.100	60	
Dugout Creek	OK620900-03-0080C	40929	22-Jul-08	6.85	86.6	7.4	O	400	27.1	919.0	8.2	126.4	18.6	0.0106	0.01	0.01	0.34	0.039	0.368	504	334.0	0.018	0.029	7	1.52
Dugout Creek	OK620900-03-0080C	41223	26-Aug-08	5.72	65.4	13.5	O	292	22.0	847.0	8.1	114.2	16.8	0.0106	0.01	0.01	0.45	0.039	0.478	498	800.0	0.011	0.041	10	0.72
Dugout Creek	OK620900-03-0080C	41564	29-Sep-08	6.46	68.7	4.4	O	306	18.4	973.0	8.1	124.7	18.6	0.0106	0.01	0.01	0.08	0.039	0.106	540	352.0	0.004	0.041	7	0.45
Dugout Creek	OK620900-03-0080C	42008	03-Nov-08	6.50	62.5	5.0	O	332	13.6	961.0	8.0	95.9	19.2	0.0106	0.01	0.01	0.43	0.039	0.458	504	336.0	0.017	0.038	27	0.42
Dugout Creek	OK620900-03-0080C	42293	16-Dec-08	14.43	98.3	5.5	O	326	0.5		8.3	98.1	22.7	0.0106	0.01	0.01	0.35	0.039	0.378	511	564.0	0.012	0.030	7	
Dugout Creek	OK620900-03-0080C	42774	03-Feb-09	12.82	91.1	4.2	O	231	1.4		8.4	121.1	26.1	0.0106	0.01	0.01	0.26	0.039	0.288	436	374.0	0.012	0.018	7	0.45
Dugout Creek	OK620900-03-0080C	42983	02-Mar-09	14.08	99.3	5.5	I	290	2.8	279.0	8.2	113.0	19.2	0.0106	0.01	0.01	0.37	0.039	0.398	462	346.0	0.008	0.045	7	
Dugout Creek	OK620900-03-0080C	43297	07-Apr-09	10.39	87.4	9.6	O	257	7.9	733.0	8.5	91.1	18.4	0.0106	0.01	0.01	0.65	0.039	0.678	426	380.0	0.020	0.197	7	
Eagle Ch Lower	OK620920-04-0010C	37133	30-May-07	8.45	94.4	202.0	I	235	20.8	1254.0	9.0	52.8	386.9	0.0106	1.94	0.01	1.16	1.965	3.114	1008	639.9	0.130	0.293	210	26.25
Eagle Ch Lower	OK620920-04-0010C	37310	25-Jun-07	6.83	82.6	387.0	I	170	24.8	937.0	7.9	32.2	264.9	0.0106	1.08	0.06	1.15	1.151	2.290	796	430.4	0.226	0.425	230	58.88
Eagle Ch Lower	OK620920-04-0010C	37794	30-Jul-07	9.97	125.3	13.5	I	244	27.4	1479.0	8.2	72.1	440.2	0.0106	1.88	0.01	0.18	1.905	2.074	1119	722.8	0.007	0.068	29	50.84
Eagle Ch Lower	OK620920-04-0010C	38098	10-Aug-07	7.73	94.7	15.4	O	347	26.7	1467.0	8.1														35.28
Eagle Ch Lower	OK620920-04-0010C	38331	17-Sep-07	11.98	97.4	111.0	I	253	25.8	1244.0	8.0	55.7	350.7	0.0106	2.78	0.01	0.71	2.805	3.504	853	541.1	0.045	0.144	110	25.10
Eagle Ch Lower	OK620920-04-0010C	38397	15-Oct-07	11.23	117.3	22.4	I	230	17.5	1193.0	8.2	62.7	280.5	0.0106	2.18	0.22	0.08	2.411	2.478	816	524.0	0.012	0.050	29	17.33
Eagle Ch Lower	OK620920-04-0010C	38545	13-Nov-07	14.50	152.0	16.9	O	256	18.0	1284.0	8.3	78.8	308.5	0.0106	2.62	0.16	0.33	2.791	3.110	899	546.6	0.010	0.049	14	11.26
Eagle Ch Lower	OK620920-04-0010C	38702	18-Dec-07	13.76	105.8	11.3	I	203	4.3	1606.0	8.2	79.1	485.3	0.0106	4.06	0.01	0.08	4.085	4.152	1148	722.1	0.009	0.032	17	20.03
Eagle Ch Lower	OK620920-04-0010C	39170	22-Jan-08	12.98	89.9	34.1		326	0.4		8.2	86.0	403.7	0.0330	5.05	0.01	0.37	5.097	5.434	1138	637.8	0.031	0.068	77	9.99
Eagle Ch Lower	OK620920-04-0010C	39628	03-Mar-08	12.80	105.9	23.0	I	279	7.1	1550.0	8.4	90.7	402.6	0.0650	2.41	0.01	0.41	2.489	2.834	1074	687.1	0.022	0.060	34	20.39
Eagle Ch Lower	OK620920-04-0010C	39915	07-Apr-08	12.78	119.9	32.9	I	230	12.5	149.3	8.3	86.3	480.2	0.0106	1.57	0.01	0.85	1.595	2.434	1045	631.9	0.012	0.076	30	30.98
Eagle Ch Lower	OK620920-04-0010C	40230	12-May-08	8.41	89.4	241.0	I	272	18.2	1710.0	8.2	111.8	477.2	0.1820	2.27	0.01	0.74	2.466	3.024	1262	920.7	0.123	0.241	1235	12.38
Eagle Ch Lower	OK620920-04-0010C	40468	16-Jun-08	12.71	155.1	115.0	I	225	25.3	1191.0	8.2	77.6	315.7	0.0106	0.84	0.01	1.80	0.865	2.654	807	487.0	0.045	0.218	123	18.23
Eagle Ch Lower	OK620920-04-0010C	40915	21-Jul-08	10.63	139.0	10.3	I	211	29.2	1210.0	8.2	91.5	305.4	0.0106	1.19	0.01	0.48	1.215	1.684	813	491.0	0.010	0.045	11	11.64
Eagle Ch Lower	OK620920-04-0010C	41209	25-Aug-08	9.86	116.1	15.4	O	209	23.5	1123.0	8.3	81.7	243.5	0.0200	1.03	0.01	0.25	1.064	1.294	749	432.0	0.016	0.075	20	8.23
Eagle Ch Lower	OK620920-04-0010C	41556	29-Sep-08	8.41	95.3	27.8	I	275	21.5	1196.0	8.1	53.5	265.3	0.0106	2.14	0.01	0.08	2.165	2.232	799	495.0	0.008	0.090	28	12.93
Eagle Ch Lower	OK620920-04-0010C	41989	03-Nov-08	9.99	100.9	30.9	I	327	16.0	1407.0	8.2	64.9	327.3	0.0106	3.62	0.01	0.44	3.645	4.074	959	623.0	0.058	0.096	16	52.60
Eagle Ch Lower	OK620920-04-0010C	42279	15-Dec-08	14.70	102.3	5.1	O	314	0.6		8.3	84.9	401.0	0.0106	3.29	0.01	0.32	3.315	3.624	1101	827.0	0.008	0.034	7	16.06
Eagle Ch Lower	OK620920-04-0010C	42760	02-Feb-09	14.15	112.2	5.2	O	290	5.4	1548.0	8.3	88.3	406.5	0.0106	2.87	0.06	0.25	2.941	3.180	1088	721.0	0.007	0.027	7	19.51
Eagle Ch Lower	OK620920-04-0010C	42975	02-Mar-09	12.84	100.5	3.5	O	299	5.0	1452.0	8.3	93.1	501.6	0.0106	2.58	0.01	0.30	2.605	2.894	1090	671.0	0.006	0.037	7	16.77
Eagle Ch Lower	OK620920-04-0010C	43283	06-Apr-09	11.05	91.7	39.2	I	278	7.2	1450.0	8.3	93.3	673.9	0.0440	2.33	0.01	0.88	2.388	3.224	1315	805.0	0.053	0.237	28	
Eagle Ch Upper	OK620920-04-0010G	37210	04-Jun-07	7.45	90.4	210.0	I	183	24.9	1741.0	7.7	58.3	690.2	0.0106	0.76	0.01	1.11	0.785	1.884	1479	927.8	0.132	0.246	140	14.06
Eagle Ch Upper	OK620920-04-0010G	37832	10-Jul-07	6.48	84.1		I	17	29.1	2214.0		77.1	999.6	0.0106	0.53	0.01	1.26	0.555	1.804	1855	1198.6	0.457	0.706	870	14.65
Eagle Ch Upper	OK620920-04-0010G	38020	07-Aug-07	10.93	151.3	6.7	O	249	32.4	2564.0	7.9	196.5	1065.1	0.0106	1.03	0.01	0.33	1.055	1.374	2106	1493.5	0.007	0.047	17	10.49
Eagle Ch Upper	OK620920-04-0010G	38097	10-Aug-07	6.43	77.4	21.7	I	273	24.6	2501.0	7.8														8.73
Eagle Ch Upper	OK620920-04-0010G	38310	17-Sep-07	12.84	162.5	15.7	O	211	26.9		8.0	87.8	737.8	0.0106	1.33	0.06	1.27	1.401	2.660	1429	931.8	0.011	0.061	44	4.54
Eagle Ch Upper	OK620920-04-0010G	38453	22-Oct-07	11.33	106.2	5.4	I	271	12.4		8.0	71.1	877.6	0.0106	1.86	0.21	0.23	2.081	2.300	1709	1137.1	0.008	0.037	7	4.93
Eagle Ch Upper	OK620920-04-0010G	38610	26-Nov-07	13.15	103.3	5.7	O	311	5.1	2214.0	8.1	362.7	990.0	0.0106	2.36	0.01	0.08	2.385	2.452	1753	1190.4	0.010	0.033	7	5.09
Eagle Ch Upper	OK620920-04-0010G	39113	08-Jan-08	12.40	101.9	17.1	I	285	6.9	2675.0	7.9	120.5	1288.1	0.0106	2.04	0.01	0.50	2.065	2.554	2235	1529.0	0.013	0.043	22	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Eagle Ch Upper	OK620920-04-0010G	39447	04-Feb-08	12.72	116.5	40.0	I	291	11.0	1016.0	8.3	111.4	1235.0	0.0106	1.85	0.01	0.55	1.875	2.414	2149	1378.9	0.021	0.065	59	4.16
Eagle Ch Upper	OK620920-04-0010G	39719	11-Mar-08	13.89	136.6	24.5	O	268	14.6	8540.0	8.1	304.9	1364.4	0.0106	1.77	0.01	0.36	1.795	2.144	2253	1537.3	0.007	0.036	31	
Eagle Ch Upper	OK620920-04-0010G	40035	15-Apr-08	12.21	115.7	21.6	I	232	12.9	8590.0	8.1	135.8	1194.0	0.0106	1.24	0.01	0.85	1.265	2.104	2333	1528.4	0.013	0.049	16	4.76
Eagle Ch Upper	OK620920-04-0010G	40306	19-May-08	12.64	165.4	30.5	I	192	29.4	2372.0	8.0	124.8	1055.5	0.0106	0.75	0.01	0.85	0.775	1.614	1959	1404.7	0.014	0.068	43	4.39
Eagle Ch Upper	OK620920-04-0010G	40545	24-Jun-08	8.47	100.9	32.0	O	182	24.2	1955.0	8.0	90.5	961.7	0.0106	0.41	0.01	0.63	0.435	1.054	1636	855.0	0.011	0.111	28	6.52
Eagle Ch Upper	OK620920-04-0010G	41002	28-Jul-08	13.87	186.6	11.3	O	176	31.1	1787.0	8.1	131.8	646.5	0.0106	0.50	0.01	0.49	0.525	1.004	1401	760.0	0.007	0.056	17	
Eagle Ch Upper	OK620920-04-0010G	41391	02-Sep-08			12.9	O	210	27.9	1605.0		125.5	514.0	0.0660	0.81	0.01	0.48	0.890	1.304	1199	680.0	0.010	0.070	13	0.84
Eagle Ch Upper	OK620920-04-0010G	41848	20-Oct-08	8.87	92.7	37.7	I	216	17.5	1826.0	8.1	83.1	785.3	0.0106	1.23	0.01	0.08	1.255	1.322	1385	836.0	0.065	0.115	22	12.74
Eagle Ch Upper	OK620920-04-0010G	42082	18-Nov-08	11.89	98.1	4.6	O	314	7.0	9990.0		126.7	1180.3	0.0106	1.43	0.01	0.46	1.455	1.904	2263	1402.0	0.006	0.028	7	4.10
Eagle Ch Upper	OK620920-04-0010G	42366	29-Dec-08	13.80	113.4	10.5	O	318	7.0	877.0	8.2	146.5	1478.8	0.0106	2.00	0.01	0.50	2.025	2.514	2389	1576.0	0.014	0.036	7	6.04
Eagle Ch Upper	OK620920-04-0010G	42831	09-Feb-09	13.62	134.4	17.3	O	282	14.6	1775.0	8.1	112.7	1301.1	0.0106	1.69	0.01	0.73	1.715	2.434	2238	1480.0	0.014	0.053	18	4.43
Eagle Ch Upper	OK620920-04-0010G	43046	10-Mar-09	8.33	82.2	12.5	O	267	14.4	2661.0	7.9	99.2	1395.0	0.0160	1.08	0.06	0.59	1.156	1.730	2205	1448.0	0.008	0.055	14	7.46
Eagle Ch Upper	OK620920-04-0010G	43356	14-Apr-09	9.46	86.3	431.0	I	173	11.2	9200.0	8.0	126.4	1603.6	0.0550	0.29	0.01	2.12	0.359	2.424	2112	1300.0	0.124	0.411	384	
Euchee Creek	OK620900-01-0290D	37158	29-May-07	6.91	79.0	102.0	I	105	21.9	236.7	6.4	6.7	12.8	0.0106	0.14	0.01	1.20	0.165	1.354	153	109.0	0.062	0.148	43	
Euchee Creek	OK620900-01-0290D	37339	25-Jun-07	9.25	117.0	30.0	I	156	26.8	371.9	7.7	13.7	19.5	0.0106	0.06	0.01	0.15	0.085	0.224	240	177.7	0.061	0.183	21	0.00
Euchee Creek	OK620900-01-0290D	37987	07-Aug-07	4.48	58.4	25.3	I	254	29.0		7.6	25.9	29.8	0.0106	0.01	0.01	0.31	0.039	0.338	354	274.6	0.017	0.071	23	0.00
Euchee Creek	OK620900-01-0290D	38271	10-Sep-07	6.29	77.3	62.9	I	76	25.3		7.3	6.7	13.7	0.0106	0.23	0.01	0.74	0.255	0.984	149	92.8	0.063	0.171	34	0.00
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	4.70	55.5	19.8	O	199	23.2	520.0	7.6														0.00
Euchee Creek	OK620900-01-0290D	38427	15-Oct-07	7.26	79.5	20.2	I	238	19.6	577.0		31.8	30.2	0.0106	0.07	0.11	0.08	0.191	0.258	607	268.1	0.171	0.258	20	
Euchee Creek	OK620900-01-0290D	38557	13-Nov-07	7.71	71.1	17.1	O	271	15.9	621.0		36.8	41.5	0.0106	0.10	0.12	0.32	0.231	0.540	406	295.4	0.087	0.154	14	0.00
Euchee Creek	OK620900-01-0290D	38715	17-Dec-07	12.55	91.3	40.2	I	123	3.0	319.3	7.6	14.7	22.4	0.0106	0.43	0.01	0.08	0.455	0.522	224	135.3	0.062	0.109	7	0.00
Euchee Creek	OK620900-01-0290D	39189	22-Jan-08	14.06	99.6	10.4	O	280	3.0	757.0	7.8	47.2	60.6	0.0106	0.31	0.01	0.17	0.335	0.494	438	323.5	0.073	0.122	7	0.00
Euchee Creek	OK620900-01-0290D	39647	03-Mar-08	10.40	93.1	606.0	I	189	10.5	499.3	8.0	28.8	41.1	0.0290	1.07	0.01	0.70	1.113	1.784	304	212.6	0.108	0.332	734	
Euchee Creek	OK620900-01-0290D	39942	07-Apr-08	9.23	93.5	10.8	O	302	15.9	619.0	8.0	37.2	54.0	0.0106	0.01	0.01	0.08	0.039	0.106	429	342.8	0.021	0.048	10	0.00
Euchee Creek	OK620900-01-0290D	40268	12-May-08	7.72	83.6	30.6	I	218	19.2	475.5	7.5	20.4	28.0	0.0106	0.30	0.01	0.08	0.325	0.392	299	252.1	0.045	0.085	25	0.00
Euchee Creek	OK620900-01-0290D	40492	17-Jun-08	6.86	78.5	295.0	I	130	22.0	323.9	7.2	16.6	21.1	0.0106	0.24	0.01	0.13	0.265	0.384	234	140.0	0.109	0.240	212	
Euchee Creek	OK620900-01-0290D	40950	22-Jul-08	5.03	65.8	21.9	I	228	28.8	561.0	7.6	22.3	25.5	0.0106	0.01	0.01	0.49	0.039	0.518	326	231.0	0.061	0.101	30	0.00
Euchee Creek	OK620900-01-0290D	41239	26-Aug-08	4.60	55.8	44.4	I	242	24.9	600.0	7.7	28.6	30.2	0.0106	0.01	0.01	0.08	0.039	0.106	344	253.0	0.030	0.094	42	0.00
Euchee Creek	OK620900-01-0290D	41584	30-Sep-08	5.85	65.9	56.7	I	212	21.4	509.0	7.3	25.5	29.1	0.0106	0.01	0.01	0.31	0.039	0.338	332	314.0	0.055	0.135	35	0.00
Euchee Creek	OK620900-01-0290D	42024	03-Nov-08	8.48	83.8	11.7	O	235	15.3	613.0	7.7	32.3	29.9	0.0106	0.01	0.01	0.46	0.039	0.488	327	317.0	0.075	0.119	7	0.00
Euchee Creek	OK620900-01-0290D	42302	15-Dec-08	10.82	83.3	17.4	O	253	4.5	472.0	7.7	51.7	50.1	0.0106	0.01	0.01	0.56	0.039	0.588	428	361.0	0.056	0.111	7	0.00
Euchee Creek	OK620900-01-0290D	42779	02-Feb-09	13.12	96.2	6.8	O	292	3.8	511.0	7.2	75.5	78.8	0.0106	1.01	0.07	0.42	1.091	1.500	468	347.0	0.326	0.364	7	0.00
Euchee Creek	OK620900-01-0290D	42999	02-Mar-09	11.13	92.1	17.3	O	282	7.6	761.0	7.9	43.3	56.6	0.0106	0.01	0.01	0.48	0.039	0.508	427	291.0	0.128	0.208	13	0.00
Euchee Creek	OK620900-01-0290D	43361	14-Apr-09	9.45	83.8	118.0	I	98	10.1	275.2	7.9	26.1	34.8	0.0830	0.22	0.01	1.53	0.317	1.764	232	134.0	0.064	0.198	42	
Gray Horse Creek	OK621200-01-0400C	37160	30-May-07	6.89	79.6	57.8	I	91	22.4	310.3		20.9	17.7	0.0106	0.10	0.01	1.01	0.125	1.124	202	118.3	0.020	0.077	28	47.26
Gray Horse Creek	OK621200-01-0400C	37341	26-Jun-07	5.14	64.1	56.5	I	129	26.5	370.0	7.3	28.5	20.4	0.0106	0.11	0.01	0.08	0.135	0.202	246	142.6	0.031	0.080	29	26.72
Gray Horse Creek	OK621200-01-0400C	37985	06-Aug-07	6.99	92.5	13.8	O	201	30.0	700.0	8.1	55.3	37.8	0.0106	0.01	0.01	0.19	0.039	0.218	401	247.0	0.009	0.065	13	7.07
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	4.50	56.7	17.8	O	209	27.2	733.0	7.8														0.37
Gray Horse Creek	OK621200-01-0400C	38273	11-Sep-07	5.49	62.9	138.0	I	76	22.1		6.5	10.9	13.8	0.0310	0.16	0.01	0.71	0.205	0.884	128	66.7	0.042	0.132	73	9.72
Gray Horse Creek	OK621200-01-0400C	38431	16-Oct-07	8.50	93.3	28.6	I	131	19.9	280.5		17.6	17.8	0.0106	0.04	0.09	0.08	0.141	0.208	174	132.8	0.019	0.073	16	0.59
Gray Horse Creek	OK621200-01-0400C	38561	14-Nov-07	9.50	94.7	12.2	O	174	15.2	412.2		15.0	28.7	0.0106	0.01	0.01	0.20	0.039	0.228	289	182.5	0.022	0.068	11	0.46
Gray Horse Creek	OK621200-01-0400C	38719	18-Dec-07	12.19	94.4	23.7	I	147	4.8	509.0	7.7	44.0	37.0	0.0106	0.16	0.01	0.08	0.185	0.252	321	179.9	0.030	0.071	7	3.84
Gray Horse Creek	OK621200-01-0400C	39196	23-Jan-08	13.66	103.7	15.6	O	202	3.8	719.0	7.7	67.0	63.5	0.0106	0.09	0.01	0.37	0.115	0.474	437	261.1	0.017	0.045	7	3.55
Gray Horse Creek	OK621200-01-0400C	39654	04-Mar-08	11.55	93.3	187.0	I	101	6.3	298.7	7.8	24.7	26.6	0.0240	0.34	0.01	0.63	0.378	0.984	242	104.1	0.048	0.148	62	57.00
Gray Horse Creek	OK621200-01-0400C	39949	08-Apr-08	10.06	91.4	575.0	I	78	11.2	282.3	7.5	29.8	24.1	0.0430	0.23	0.01	1.26	0.287	1.504	208	99.7	0.096	0.405	620	
Gray Horse Creek	OK621200-01-0400C	40275	13-May-08	9.34	103.1	13.3	O	176	20.1	499.0	7.5	28.1	37.8	0.0106	0.01	0.01	0.08	0.039	0.106	312	228.0	0.012	0.060	10	16.39
Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	5.49	69.4		O	200	28.0	838.0	7.4	116.8	51.9	0.0106	0.01	0.01	0.38	0.039	0.408	451	227.0	0.007	0.034	11	0.61
Gray Horse Creek	OK621200-01-0400C	41234	26-Aug-08	5.62	65.2	11.1	O	197	25.1	740.0	7.1	76.3	59.6	0.0106	0.01	0.01	0.08	0.039	0.106	425	238.0	0.004	0.039	7	0.21
Gray Horse Creek	OK621200-01-0400C	41576	29-Sep-08	6.48	71.3	15.4	I	165	20.2	519.0	7.7	41.9	41.6	0.0106	0.01	0.01	0.08	0.039	0.106	337	178.0	0.011	0.059	7	4.17
Gray Horse Creek	OK621200-01-0400C	42019	03-Nov-08	6.13	60.1	7.7	O	174	14.2	474.0	7.5	22.8	34.0	0.0106	0.01	0.01	0.36	0.039	0.388	273	226.0	0.024	0.051	7	0.44
Gray Horse Creek	OK621200-01-0400C	42303	16-Dec-08	12.17	88.1	11.4	O	170	2.0	278.3	8.0	26.2	27.6	0.0106	0.01	0.01	0.35	0.039	0.378	296	311.0	0.014	0.055	7	0.44

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Gray Horse Creek	OK621200-01-0400C	42784	02-Feb-09	16.82	123.3	7.3	O	189	2.5	385.9	7.9	29.1	39.8	0.0106	0.01	0.01	0.22	0.039	0.248	326	359.0	0.011	0.053	7	0.08
Gray Horse Creek	OK621200-01-0400C	42994	02-Mar-09	9.66	74.1		I	167	4.1	413.1	7.9	26.1	34.6	0.0106	0.26	0.01	0.45	0.285	0.724	286	270.0	0.019	0.088	15	0.31
Gray Horse Creek	OK621200-01-0400C	43366	13-Apr-09	10.15	89.5	419.0		89	9.9	208.4	7.9	13.4	20.1	0.0210	0.10	0.01	1.85	0.135	1.964	199	134.0	0.057	0.263	269	
Griever Creek	OK620920-01-0130G	37199	04-Jun-07	8.48	97.1	30.8	I	164	22.0	2533.0	8.1	126.5	1081.6	0.0106	0.10	0.01	0.49	0.125	0.604	2228	1256.1	0.042	0.060	22	1.60
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	7.28	87.1	8.0	I	147	24.4	2958.0	7.9														0.75
Griever Creek	OK620920-01-0130G	37739	09-Jul-07	6.39	78.4	1000.0	I	130	25.8	1458.0	7.6	65.5	923.4	0.0360	0.33	0.01	2.56	0.380	2.904	1691	1253.9	0.522	0.956	1146	13.79
Griever Creek	OK620920-01-0130G	37991	06-Aug-07	7.48	90.2	2.5	O	201	24.8	3812.0	7.9	224.0	1760.4	0.0106	0.36	0.01	0.31	0.385	0.684	3466	2383.6	0.004	0.023	7	1.17
Griever Creek	OK620920-01-0130G	38285	17-Sep-07	8.36	93.0	2.3	O	185	20.5	3644.0	8.0	210.0	1205.5	0.0470	0.07	0.01	0.43	0.131	0.514	3325	2048.2	0.007	0.015	7	2.26
Griever Creek	OK620920-01-0130G	38451	23-Oct-07	10.80	101.2	2.8	O	194	12.3	3685.0	8.2	236.6	1668.7	0.0106	0.23	0.51	0.26	0.751	1.000	3324	2085.9	0.007	0.017	7	1.82
Griever Creek	OK620920-01-0130G	38598	26-Nov-07	13.49	96.3	2.2	I	165	1.4	3825.0	8.1	262.0	1928.3	0.0106	0.21	0.01	0.17	0.235	0.394	3335	2432.2	0.005	0.006	7	2.42
Griever Creek	OK620920-01-0130G	39107	08-Jan-08	12.40	99.8	6.9	O	220	6.0	3351.0	8.1	193.1	1782.2	0.0106	0.09	0.01	0.36	0.115	0.464	2911	2091.0	0.006	0.023	10	1.01
Griever Creek	OK620920-01-0130G	39442	05-Feb-08	12.26	95.3	6.3	I	210	4.7	3246.0	8.2	191.1	1622.9	0.0106	0.20	0.01	0.32	0.225	0.534	2758	1801.5	0.006	0.012	7	2.02
Griever Creek	OK620920-01-0130G	39709	11-Mar-08	11.82	100.6	5.0	O	202	8.2	3356.0	8.2	195.5	2015.1	0.0106	0.13	0.01	0.08	0.155	0.222	2926	2013.1	0.007	0.013	7	3.52
Griever Creek	OK620920-01-0130G	40031	15-Apr-08	10.82	104.3	10.5	O	286	13.5	3203.0	8.0	192.3	1384.3	0.0106	0.01	0.01	0.56	0.039	0.588	2807	1791.9	0.005	0.017	15	2.97
Griever Creek	OK620920-01-0130G	40289	19-May-08	7.88	101.4	12.4	I	180	28.6	3427.0	8.0	262.3	1630.9	0.0106	0.01	0.01	0.83	0.039	0.858	3056	2363.2	0.004	0.042	15	1.70
Griever Creek	OK620920-01-0130G	40567	24-Jun-08	8.51	109.8	3.6	I	282	28.5	2710.0	8.1	250.9	1778.1	0.0106	0.01	0.01	0.58	0.039	0.608	3034	1885.0	0.004	0.035	7	0.21
Griever Creek	OK620920-01-0130G	41007	28-Jul-08	7.94	94.8	2.3	I	156	24.3	3560.0	7.9	430.9	2245.1	0.0106	0.01	0.01	0.27	0.039	0.298	4112	2055.0	0.004	0.016	7	0.04
Griever Creek	OK620920-01-0130G	41396	02-Sep-08	7.65	92.4	7.4	I	106	24.8	3606.0	7.9	317.9	1851.9	0.0106	0.01	0.01	0.29	0.039	0.318	3170	1860.0	0.011	0.020	7	0.29
Griever Creek	OK620920-01-0130G	41783	06-Oct-08	8.06	85.7		I	87	18.3	2623.0	7.7	125.5	1281.6	0.0106	0.29	0.01	1.04	0.315	1.344	2293	1262.0	0.483	0.740	933	21.93
Griever Creek	OK620920-01-0130G	42088	17-Nov-08	12.21	104.5	1.8	I	184	8.5	1575.0	8.2	274.4	1819.7	0.0106	0.01	0.01	0.38	0.039	0.408	3165	1870.0	0.008	0.015	7	0.96
Griever Creek	OK620920-01-0130G	42308	15-Dec-08	15.45	105.4	4.1	O	226	0.1	3450.0	7.9	268.8	1802.4	0.0106	0.01	0.01	0.41	0.039	0.438	3265	2092.0	0.004	0.014	7	0.94
Griever Creek	OK620920-01-0130G	42838	09-Feb-09	10.67	97.5	18.4	I	217	11.3	1326.0	8.1	195.9	1594.7	0.0106	0.11	0.01	0.49	0.135	0.614	2782	1560.0	0.011	0.039	14	
Griever Creek	OK620920-01-0130G	43004	02-Mar-09	13.04	100.8	4.4	I	145	4.5	1283.0	8.1	230.4	2002.2	0.0106	0.05	0.01	0.38	0.075	0.444	2970	1800.0	0.006	0.034	7	1.59
Griever Creek	OK620920-01-0130G	43372	13-Apr-09	10.98	102.5	27.3	I	157	12.2	1694.0	8.1	194.2	2180.5	0.0106	0.01	0.01	0.87	0.039	0.898	2671	1640.0	0.004	0.058	27	
Indian Creek Major	OK620910-02-0310C	37134	30-May-07	8.19	92.3	18.0	I	245	21.3	1005.0	7.2	155.5	178.2	0.0106	3.84	0.01	0.74	3.865	4.594	832	433.7	0.115	0.152	26	9.96
Indian Creek Major	OK620910-02-0310C	37171	31-May-07	8.97	96.2	44.1	I	218	18.8	1167.0	7.8														11.57
Indian Creek Major	OK620910-02-0310C	37309	25-Jun-07	7.36	84.6	23.5	I	262	22.0	1156.0	7.9	161.4	182.5	0.0106	3.57	0.01	0.62	3.595	4.204	870	470.1	0.176	0.202	28	8.45
Indian Creek Major	OK620910-02-0310C	37793	30-Jul-07	7.64	91.8	3.5	I	275	24.6	1755.0	8.1	178.9	184.2	0.0106	5.71	0.01	0.18	5.735	5.904	886	491.8	0.050	0.088	7	6.41
Indian Creek Major	OK620910-02-0310C	38330	17-Sep-07	7.59	88.6	7.1	I	276	23.1	1421.0	8.0	181.7	161.8	0.0106	5.94	0.01	0.48	5.965	6.434	866	450.6	0.098	0.132	11	44.80
Indian Creek Major	OK620910-02-0310C	38396	15-Oct-07	8.25	83.3	302.0	I	234	15.7	1050.0	8.1	132.7	340.5	0.0106	2.52	0.39	1.33	2.921	4.240	995	526.0	0.322	0.600	436	42.94
Indian Creek Major	OK620910-02-0310C	38544	13-Nov-07	11.30	114.0	2.5	I	272	15.8	876.0	8.3	184.3	318.3	0.0106	3.84	0.01	0.28	3.865	4.134	854	478.8	0.025	0.050	7	10.59
Indian Creek Major	OK620910-02-0310C	38701	18-Dec-07	11.93	92.1	3.9	I	284	4.4	1082.0	8.2	186.2	321.7	0.0106	5.21	0.01	0.48	5.235	5.704	927	555.3	0.064	0.097	7	13.31
Indian Creek Major	OK620910-02-0310C	39169	22-Jan-08	13.02	91.8	3.9		293	1.2		8.1	185.7	282.3	0.0200	5.97	0.01	0.29	6.004	6.274	905	555.3	0.046	0.068	7	15.05
Indian Creek Major	OK620910-02-0310C	39627	03-Mar-08	10.15	83.7	986.0	I	195	5.7	696.0	8.0	137.6	163.8	0.3470	2.40	0.01	2.39	2.761	4.804	599	294.0	0.478	0.903	422	71.00
Indian Creek Major	OK620910-02-0310C	39914	07-Apr-08	9.80	89.4	8.7	I	270	11.2	1273.0	8.1	191.8	330.8	0.0106	3.77	0.01	0.45	3.795	4.234	880	491.4	0.114	0.140	15	17.39
Indian Creek Major	OK620910-02-0310C	40229	12-May-08	9.21	90.9	11.5	I	290	14.7	1410.0	8.2	172.4	248.0	0.0106	5.26	0.01	0.12	5.285	5.394	880	520.8	0.140	0.173	14	19.90
Indian Creek Major	OK620910-02-0310C	40467	16-Jun-08	8.52	97.8	22.8	I	298	22.2	1623.0	7.8	233.8	345.0	0.0106	3.12	0.01	0.87	3.145	4.004	1001	552.0	0.175	0.225	39	29.72
Indian Creek Major	OK620910-02-0310C	40914	21-Jul-08	7.90	93.8	10.8	O	295	23.8	1195.0	8.2	202.2	200.7	0.0106	3.96	0.01	0.37	3.985	4.344	880	454.0	0.100	0.138	18	10.05
Indian Creek Major	OK620910-02-0310C	41208	25-Aug-08	9.05	103.8	7.9	I	270	22.1	776.0	8.3	216.2	210.1	0.0106	5.21	0.01	0.25	5.235	5.474	854	447.0	0.105	0.159	13	7.30
Indian Creek Major	OK620910-02-0310C	41555	29-Sep-08	8.63	91.3	5.3	O	300	18.0	1332.0	8.3	224.4	301.8	0.0106	3.36	0.01	0.08	3.385	3.452	1006	545.0	0.034	0.073	15	10.46
Indian Creek Major	OK620910-02-0310C	41988	03-Nov-08	9.69	94.9	6.2	I	369	14.4	1112.0	8.3	220.5	298.8	0.0106	4.37	0.01	0.38	4.395	4.764	954	557.0	0.052	0.076	10	15.06
Indian Creek Major	OK620910-02-0310C	42278	15-Dec-08	14.76	101.0	3.2	O	360	0.1		8.2	180.6	283.9	0.0106	4.24	0.01	0.43	4.265	4.684	1013	649.0	0.014	0.029	7	18.06
Indian Creek Major	OK620910-02-0310C	42759	02-Feb-09	13.46	101.6	5.2	I	303	3.6	1465.0	8.4	191.7	286.5	0.0106	4.59	0.09	0.39	4.691	5.070	905	514.0	0.047	0.072	7	4.02
Indian Creek Major	OK620910-02-0310C	42974	02-Mar-09	13.63	101.2	2.0	I	284	2.9	1168.0	8.2	266.3	313.5	0.0106	4.03	0.01	0.32	4.055	4.364	883	484.0	0.011	0.044	7	4.14
Indian Creek Major	OK620910-02-0310C	43282	06-Apr-09	11.19	88.7	3.3	O	312	5.4	1367.0	8.4	191.3	314.8	0.0106	4.63	0.01	0.48	4.655	5.124	889	495.0	0.043	0.184	7	
Indian Creek Woodward	OK720500-01-0200D	37203	04-Jun-07	8.31	100.4	22.1	I	230	25.2	1052.0	8.1	174.2	243.9	0.0106	0.31	0.01	0.85	0.335	1.174	987	490.8	0.052	0.085	45	3.97
Indian Creek Woodward	OK720500-01-0200D	37737	09-Jul-07	6.49	78.3	17.8	O	243	24.0	1012.0	8.1	185.6	274.3	0.0106	0.63	0.01	0.42	0.655	1.064	1125	546.6	0.047	0.086	35	6.57
Indian Creek Woodward	OK720500-01-0200D	37893	26-Jul-07	8.04	95.6	10.7	I	288	23.8	1788.0	8.1														5.43
Indian Creek Woodward	OK720500-01-0200D	37995	06-Aug-07	7.39	98.0	24.9	I	210	30.0	940.0	8.2	191.4	293.5	0.0106	0.59	0.01	0.52	0.615	1.124	1126	541.1	0.039	0.082	46	4.04
Indian Creek Woodward	OK720500-01-0200D	38289	17-Sep-07	7.96	94.3	13.4	I	215	23.8	1122.0	8.3	191.1	256.8	0.0106	0.37	0.01	0.39	0.395	0.774	1005	478.0	0.024	0.048	24	3.71
Indian Creek Woodward	OK720500-01-0200D	38443	22-Oct-07	10.24	94.0	7.2	I	237	11.5	1254.0	8.4	181.1	252.1	0.0106	0.24	0.41	0.23	0.661	0.880	1020	506.1	0.013	0.035	16	2.61

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Indian Creek Woodward	OK720500-01-0200D	38602	26-Nov-07	13.09	99.8	6.4	I	240	4.0	1466.0	8.4	163.4	217.4	0.0106	0.61	0.01	0.17	0.635	0.794	939	427.3	0.010	0.026	7	5.02
Indian Creek Woodward	OK720500-01-0200D	39099	07-Jan-08	11.14	93.5	7.9	I	250	7.8	1544.0	8.3	165.9	225.7	0.0106	0.67	0.01	0.31	0.695	0.994	975	499.0	0.011	0.034	12	3.10
Indian Creek Woodward	OK720500-01-0200D	39434	04-Feb-08	13.81	108.1	10.0	I	260	5.0	1173.0	8.3	178.5	231.9	0.0106	0.71	0.01	0.31	0.735	1.034	940	507.2	0.012	0.031	16	4.73
Indian Creek Woodward	OK720500-01-0200D	39701	10-Mar-08	11.73	92.7	7.8	I	235	5.3	1540.0	8.3	150.9	245.5	0.0106	0.51	0.01	0.13	0.535	0.654	909	451.3	0.006	0.022	7	6.70
Indian Creek Woodward	OK720500-01-0200D	40023	14-Apr-08	10.78	94.1	19.6	I	254	9.3	156.0	8.2	175.1	251.0	0.0106	0.28	0.01	0.64	0.305	0.934	1021	507.9	0.019	0.041	38	7.77
Indian Creek Woodward	OK720500-01-0200D	40287	19-May-08	9.51	108.4	10.5	I	236	21.9	1253.0	8.2	214.3	261.6	0.0106	0.16	0.01	0.58	0.185	0.754	1049	582.9	0.014	0.083	23	4.54
Indian Creek Woodward	OK720500-01-0200D	40565	24-Jun-08	8.32	102.7	25.8	I	214	26.0	1774.0	8.3	236.0	310.1	0.0106	0.30	0.01	0.61	0.325	0.924	1142	544.0	0.030	0.062	45	2.56
Indian Creek Woodward	OK720500-01-0200D	41017	29-Jul-08	6.95	81.3	27.0	I	205	23.1	1919.0	8.2	293.6	308.1	0.0106	0.18	0.01	0.32	0.205	0.514	1210	555.0	0.019	0.055	40	1.26
Indian Creek Woodward	OK720500-01-0200D	41405	03-Sep-08	8.51	88.8	13.9	I	202	17.4	1738.0	8.2	276.5	306.0	0.0106	0.01	0.01	0.29	0.039	0.318	1128	560.0	0.019	0.045	19	1.89
Indian Creek Woodward	OK720500-01-0200D	41791	07-Oct-08	8.51	84.5	14.6	I	228	15.0	1622.0	8.0	209.6	235.0	0.0106	0.16	0.01	0.24	0.185	0.414	1022	475.0	0.037	0.074	27	11.51
Indian Creek Woodward	OK720500-01-0200D	42095	18-Nov-08	12.15	97.0	3.7	I	261	5.7	1309.0	8.3	202.1	259.5	0.0106	0.37	0.01	0.54	0.395	0.924	1066	550.0	0.005	0.005	7	6.57
Indian Creek Woodward	OK720500-01-0200D	42376	29-Dec-08	13.75	98.9	5.0	O	264	1.8	1628.0	8.2	214.2	300.7	0.0106	0.62	0.01	0.50	0.645	1.134	1025	555.0	0.008	0.027	7	6.62
Indian Creek Woodward	OK720500-01-0200D	42846	10-Feb-09	11.01	89.8	12.7	I	255	6.6	1125.0	8.2	237.6	309.6	0.0106	0.45	0.01	0.51	0.475	0.974	985	475.0	0.017	0.036	23	
Indian Creek Woodward	OK720500-01-0200D	43012	03-Mar-09	13.36	102.7	7.0	I	232	4.3	1125.0	8.3	241.7	339.4	0.0106	0.36	0.01	0.31	0.385	0.684	983	465.0	0.011	0.039	14	13.28
Indian Creek Woodward	OK720500-01-0200D	43379	14-Apr-09	10.45	90.6	7.6	I	256	9.1	1258.0	8.1	273.9	372.4	0.0106	0.21	0.01	1.03	0.235	1.254	1120	536.0	0.010	0.062	10	
Kingfisher Creek	OK620910-05-0010J	37127	29-May-07	6.94	77.9	136.0	I	214	21.2	1865.0	7.9	148.1	529.6	0.0106	0.47	0.01	1.29	0.495	1.774	1389	786.3	0.199	0.326	111	32.49
Kingfisher Creek	OK620910-05-0010J	37314	25-Jun-07	6.46	78.1	1000.0	I	152	25.3	1638.0	7.6	93.5	409.6	0.0106	0.39	0.01	1.51	0.415	1.914	1163	551.1	0.495	0.780	1200	
Kingfisher Creek	OK620910-05-0010J	37799	31-Jul-07	6.32	75.2	209.0	I	241	24.5	1905.0	7.9	160.2	439.3	0.0180	0.91	0.01	1.96	0.942	2.884	1390	687.1	0.219	0.351	102	14.60
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	7.24	90.1	17.5	O	284	26.5	2518.0	7.9														23.92
Kingfisher Creek	OK620910-05-0010J	38334	18-Sep-07	7.92	90.8	14.1	I	412	22.0	2443.0	8.0	241.8	730.1	0.0106	1.29	0.01	0.62	1.315	1.924	1744	914.2	0.063	0.108	15	36.89
Kingfisher Creek	OK620910-05-0010J	38402	16-Oct-07	7.99	81.7	57.4	I	286	16.3	2449.0	7.9	203.9	591.6	0.0106	1.73	0.46	0.68	2.201	2.870	1730	898.6	0.082	0.147	69	58.18
Kingfisher Creek	OK620910-05-0010J	38549	14-Nov-07	8.05	70.7	15.5	O	328	14.3	2517.0	8.1	233.0	683.7	0.0106	1.39	0.01	0.41	1.415	1.814	1786	932.0	0.023	0.050	21	58.47
Kingfisher Creek	OK620910-05-0010J	38695	17-Dec-07	12.61	90.5	14.0	I	312	1.7		8.1	316.4	746.2	0.0106	2.18	0.01	0.65	2.205	2.844	1923	966.3	0.050	0.077	12	15.84
Kingfisher Creek	OK620910-05-0010J	39175	23-Jan-08	13.98	95.7	14.6	I	335	0.0		8.2	294.8	800.7	0.0190	2.56	0.01	0.40	2.593	2.974	2027	969.1	0.039	0.061	21	8.91
Kingfisher Creek	OK620910-05-0010J	39633	04-Mar-08	11.26	89.1	456.0	I	229	5.4	3097.0	8.1	353.5	717.1	0.1070	1.37	0.01	1.51	1.491	2.894	2105	1024.5	0.186	0.335	331	
Kingfisher Creek	OK620910-05-0010J	39920	08-Apr-08	8.23	79.9	22.5	I	255	14.0	2701.0	8.1	316.3	908.9	0.0106	0.85	0.01	0.63	0.875	1.494	1946	1059.2	0.015	0.036	22	29.31
Kingfisher Creek	OK620910-05-0010J	40235	13-May-08	8.34	88.6	86.0	I	314	18.2	2449.0		221.3	681.5	0.0106	1.31	0.01	0.55	1.335	1.874	1749	1139.8	0.109	0.166	60	49.22
Kingfisher Creek	OK620910-05-0010J	40473	17-Jun-08	6.61	75.0	239.0	I	323	21.7	2265.0	7.6	231.5	621.7	0.0106	1.04	0.01	0.43	1.065	1.484	1685	833.0	0.184	0.238	184	
Kingfisher Creek	OK620910-05-0010J	40920	22-Jul-08	4.73	58.6	73.9	I	276	26.3	2215.0	8.0	233.7	548.0	0.0220	0.64	0.01	0.62	0.676	1.274	1520	727.0	0.074	0.133	51	9.93
Kingfisher Creek	OK620910-05-0010J	41214	26-Aug-08	6.67	77.9	113.0	I	260	23.1	1578.0	8.1	185.9	637.2	0.0106	1.09	0.01	0.50	1.115	1.604	1619	822.0	0.098	0.154	74	17.25
Kingfisher Creek	OK620910-05-0010J	41561	30-Sep-08	5.34	58.7	73.9	I	254	19.9	2240.0	8.1	203.4	601.2	0.0530	0.72	0.01	0.23	0.787	0.964	1544	695.0	0.047	0.118	52	6.28
Kingfisher Creek	OK620910-05-0010J	41994	04-Nov-08	7.44	73.0	43.0	I	293	14.6	2401.0	8.1	355.3	1017.4	0.0270	1.46	0.01	0.84	1.501	2.314	1783	975.0	0.042	0.062	30	8.53
Kingfisher Creek	OK620910-05-0010J	42284	16-Dec-08	15.25	105.1	8.0	O	284	0.3		8.1	212.4	779.6	0.0106	2.18	0.01	0.48	2.205	2.674	1804	1048.0	0.016	0.023	7	8.64
Kingfisher Creek	OK620910-05-0010J	42765	03-Feb-09	11.35	83.3	9.2	O	296	2.6	2490.0	8.1	263.9	1102.0	0.0106	1.94	0.05	0.43	2.001	2.420	1786	995.0	0.018	0.038	7	16.64
Kingfisher Creek	OK620910-05-0010J	42980	03-Mar-09	10.74	84.6	8.0	O	265	5.2	2254.0	8.1	272.8	1063.8	0.0106	1.12	0.01	0.29	1.145	1.424	1716	825.0	0.013	0.055	7	10.62
Kingfisher Creek	OK620910-05-0010J	43288	07-Apr-09	9.05	74.4	41.8	I	275	6.8	2447.0	8.2	276.6	902.9	0.0490	0.84	0.01	0.58	0.903	1.434	1821	874.0	0.030	0.241	19	
Kiowa Harper Co.	OK720500-02-0130C	37193	04-Jun-07	7.41	90.4	40.1	I	246	25.4	1015.0	8.0	190.2	73.7	0.0106	0.95	0.01	0.39	0.975	1.354	599	313.8	0.085	0.131	54	65.39
Kiowa Harper Co.	OK720500-02-0130C	37729	09-Jul-07	6.23	81.1	33.6	I	219	29.2	893.0	7.7	184.1	75.8	0.0106	0.34	0.01	0.51	0.365	0.864	571	297.9	0.049	0.089	48	18.53
Kiowa Harper Co.	OK720500-02-0130C	37977	06-Aug-07	7.66	104.8	67.6	I	190	31.8	769.0	8.3	203.2	64.9	0.0106	0.39	0.01	0.40	0.415	0.804	456	253.2	0.087	0.136	83	13.84
Kiowa Harper Co.	OK720500-02-0130C	38760	07-Sep-07	7.91	91.8	11.5	I	184	22.7	843.0	8.1														7.41
Kiowa Harper Co.	OK720500-02-0130C	38302	10-Sep-07	8.23	88.8	11.4	I	204	19.0	899.0	8.3	234.8	82.3	0.0106	0.29	0.01	0.23	0.315	0.534	534	279.5	0.018	0.036	13	7.11
Kiowa Harper Co.	OK720500-02-0130C	38471	23-Oct-07	11.81	105.9	4.1	I	211	10.5	898.0	8.4	105.6	56.7	0.0106	0.42	0.26	0.29	0.691	0.970	523	283.0	0.004	0.019	7	3.92
Kiowa Harper Co.	OK720500-02-0130C	38629	27-Nov-07	12.20	102.4	8.2	I	233	7.7	1017.0	8.4	118.9	63.1	0.0106	0.57	0.19	0.28	0.771	1.040	538	295.3	0.011	0.032	7	6.59
Kiowa Harper Co.	OK720500-02-0130C	39126	08-Jan-08	11.63	96.0	7.4	I	219	7.1	1041.0	8.4	115.2	62.4	0.0106	0.64	0.01	0.24	0.665	0.894	536	299.6	0.016	0.024	7	12.55
Kiowa Harper Co.	OK720500-02-0130C	39459	04-Feb-08	11.50	108.9	6.6	I	224	12.9	987.0	8.5	328.9	87.3	0.0106	0.46	0.01	0.08	0.485	0.552	542	296.5	0.007	0.021	7	11.74
Kiowa Harper Co.	OK720500-02-0130C	39729	11-Mar-08	9.85	83.8	8.2	I	216	8.3	1042.0	8.3	107.4	60.1	0.0106	0.51	0.01	0.08	0.535	0.602	533	287.1	0.010	0.026	11	11.27
Kiowa Harper Co.	OK720500-02-0130C	40051	15-Apr-08	11.32	106.3	8.1	I	205	12.5	1010.0	8.4	125.9	62.8	0.0106	0.13	0.01	0.37	0.155	0.514	513	278.8	0.006	0.033	7	11.15
Kiowa Harper Co.	OK720500-02-0130C	40258	13-May-08	9.91	104.5	12.3	I	192	17.9	953.0	8.3	116.7	57.7	0.0106	0.20	0.01	0.28	0.225	0.494	506	276.7	0.007	0.022	26	10.88
Kiowa Harper Co.	OK720500-02-0130C	40506	17-Jun-08	7.90	87.7	25.8	I	203	20.4	808.0	8.1	105.1	55.7	0.0330	0.42	0.01	0.26	0.467	0.694	467	252.0	0.016	0.061	38	4.34
Kiowa Harper Co.	OK720500-02-0130C	40943	22-Jul-08	8.46	101.9	9.2	I	236	24.7	897.0	8.1	125.1	53.7	0.0106	0.26	0.01	0.54	0.285	0.814	507	245.0	0.020	0.054	18	1.61
Kiowa Harper Co.	OK720500-02-0130C	41253	26-Aug-08	6.10	70.1	25.6	I	212	22.2	897.0	7.8	114.2	55.7	0.0106	0.38	0.01	0.08	0.405	0.472	526	268.0	0.090	0.141	28	58.24

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Kiowa Harper Co.	OK720500-02-0130C	41594	30-Sep-08	9.11	90.4	25.4	I	226	15.0	1021.0	8.2	110.9	62.3	0.0106	0.56	0.01	0.28	0.585	0.854	565	310.0	0.035	0.072	32	
Kiowa Harper Co.	OK720500-02-0130C	42003	03-Nov-08	9.32	97.9	6.0	I	214	17.7	954.0	8.4	119.9	63.7	0.0106	0.25	0.01	0.26	0.275	0.524	539	320.0	0.014	0.028	7	13.56
Kiowa Harper Co.	OK720500-02-0130C	42388	30-Dec-08	13.04	102.5	3.5	I	221	5.1	1048.0	8.2	125.8	66.4	0.0106	0.56	0.01	0.44	0.585	1.014	546	265.0	0.005	0.020	7	9.65
Kiowa Harper Co.	OK720500-02-0130C	42800	03-Feb-09	11.86	87.7	7.4	I	224	2.8	1095.0	8.3	179.8	76.5	0.0106	0.81	0.01	0.22	0.835	1.044	535	320.0	0.009	0.037	7	
Kiowa Harper Co.	OK720500-02-0130C	43063	10-Mar-09	10.19	85.2	4.4	I	233	7.6	1068.0	8.3	133.3	61.4	0.0106	0.33	0.01	0.22	0.355	0.564	523	290.0	0.006	0.025	7	10.21
Kiowa Harper Co.	OK720500-02-0130C	43312	07-Apr-09	11.64	100.6	5.4	I	230	8.9	1053.0	8.3	115.2	62.6	0.0106	0.21	0.01	0.48	0.235	0.704	519	272.0	0.004	0.116	7	
Kiowa Creek	OK720500-02-0130M	37196	05-Jun-07	6.45	72.0	66.1	I	206	20.6	708.0	7.5	60.9	39.5	0.0106	0.78	0.01	0.08	0.805	0.872	462	251.6	0.123	0.172	50	19.79
Kiowa Creek	OK720500-02-0130M	37732	10-Jul-07	5.31	63.7	14.2	I	219	24.2	949.0	7.7	123.2	78.6	0.0106	0.33	0.01	0.70	0.355	1.044	617	298.5	0.010	0.081	20	5.82
Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	5.37	63.4	18.2	I	184	23.5	946.0	7.3														4.15
Kiowa Creek	OK720500-02-0130M	37980	07-Aug-07	5.83	70.8	27.9	I	200	25.2	870.0	7.8	97.4	63.3	0.0730	0.42	0.01	0.43	0.507	0.864	502	274.9	0.062	0.113	30	5.10
Kiowa Creek	OK720500-02-0130M	38306	11-Sep-07	6.68	69.9	15.2	I	202	17.5	981.0	7.7	106.2	71.2	0.0820	0.81	0.01	0.74	0.906	1.564	585	297.3	0.033	0.060	17	3.54
Kiowa Creek	OK720500-02-0130M	38472	23-Oct-07	8.70	79.6	4.8	I	212	11.4	990.0	8.0	122.5	79.3	0.0106	0.54	0.29	0.39	0.841	1.220	576	308.2	0.013	0.028	7	2.55
Kiowa Creek	OK720500-02-0130M	38628	27-Nov-07	10.89	86.8	4.0	I	237	5.7	1102.0	8.2	141.6	74.8	0.0106	0.69	0.01	0.39	0.715	1.094	584	323.6	0.007	0.035	7	3.44
Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	9.92	82.7	7.2	I	228	7.4	1095.0	8.1	124.0	77.3	0.0106	0.72	0.01	0.27	0.745	1.004	564	326.1	0.019	0.029	7	5.33
Kiowa Creek	OK720500-02-0130M	39463	05-Feb-08	8.40	68.8	8.8	I	232	6.8	1118.0	8.1	151.2	120.7	0.0106	0.51	0.01	0.08	0.535	0.602	572	323.6	0.010	0.028	12	4.28
Kiowa Creek	OK720500-02-0130M	39730	11-Mar-08	8.34	73.6	7.0	O	221	9.3	1098.0	8.0	118.1	71.1	0.0106	0.45	0.01	0.17	0.475	0.634	574	319.9	0.008	0.023	7	4.90
Kiowa Creek	OK720500-02-0130M	40052	15-Apr-08	9.61	91.7	6.5	I	225	13.2	1070.0	8.0	130.9	70.1	0.0106	0.22	0.01	0.58	0.245	0.814	565	314.0	0.008	0.047	7	4.17
Kiowa Creek	OK720500-02-0130M	40259	13-May-08	7.44	77.6	5.9	I	212	17.4	1021.0	7.9	136.3	69.0	0.0106	0.14	0.01	0.30	0.165	0.454	553	304.8	0.004	0.019	7	3.66
Kiowa Creek	OK720500-02-0130M	40507	17-Jun-08	4.80	55.9	4.3	O	198	22.9	974.0	7.7	146.5	77.5	0.0530	0.11	0.01	0.30	0.177	0.424	564	296.0	0.006	0.033	7	1.82
Kiowa Creek	OK720500-02-0130M	40944	22-Jul-08	4.25	52.0	7.0	I	177	25.6	958.0	7.6	150.7	77.5	0.1080	0.15	0.01	0.52	0.272	0.684	574	350.0	0.022	0.040	7	1.56
Kiowa Creek	OK720500-02-0130M	41254	26-Aug-08	5.35	62.1	35.1	I	203	22.7	883.0	7.6	109.0	59.1	0.0570	0.73	0.01	0.13	0.801	0.874	527	284.0	0.135	0.196	41	26.78
Kiowa Creek	OK720500-02-0130M	41595	30-Sep-08	6.91	72.3	21.3	I	229	17.5	1086.0	7.9	131.4	80.5	0.0106	0.45	0.01	0.41	0.475	0.874	613	285.0	0.017	0.059	23	
Kiowa Creek	OK720500-02-0130M	42007	04-Nov-08	7.35	71.9	21.8	I	228	14.4	1051.0	7.8	102.1	69.6	0.0106	0.56	0.01	0.45	0.585	1.024	551	330.0	0.025	0.060	16	4.70
Kiowa Creek	OK720500-02-0130M	42389	30-Dec-08	10.58	89.2	3.8	I	226	5.6	1013.0	7.9	133.8	76.3	0.0106	0.62	0.01	0.62	0.645	1.254	575	295.0	0.005	0.023	7	4.49
Kiowa Creek	OK720500-02-0130M	42801	03-Feb-09	10.25	79.6	2.1	O	226	4.7	1066.0	8.0	198.0	87.5	0.0106	0.69	0.08	0.26	0.781	1.030	563	320.0	0.007	0.041	7	
Kiowa Creek	OK720500-02-0130M	43057	09-Mar-09	7.82	73.1	3.5	I	210	12.4	1092.0	7.8	148.4	98.9	0.0106	0.26	0.01	0.47	0.285	0.744	546	290.0	0.006	0.027	7	4.48
Kiowa Creek	OK720500-02-0130M	43304	06-Apr-09	10.24	88.0	3.7	O	206	8.7	1066.0	8.0	175.8	100.8	0.0106	0.01	0.01	0.55	0.039	0.578	551	288.0	0.014	0.101	7	
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	6.81	80.4	7.3	I	217	23.5	463.5	7.8														2.14
Lagoon Creek	OK620900-01-0180J	37155	29-May-07	6.78	75.6	99.0	I	82	21.0	201.7	6.6	10.5	6.8	0.0106	0.11	0.01	1.06	0.135	1.184	171	89.0	0.035	0.107	37	49.10
Lagoon Creek	OK620900-01-0180J	37336	25-Jun-07	5.92	71.8	24.6	I	105	25.1	255.0	7.7	13.3	8.0	0.0106	0.08	0.01	0.08	0.105	0.172	185	110.5	0.025	0.070	13	24.39
Lagoon Creek	OK620900-01-0180J	37990	07-Aug-07	4.06	51.2	34.9	I	370	28.8		7.5	73.3	30.0	0.0106	0.01	0.01	0.47	0.039	0.498	438	303.6	0.013	0.068	43	
Lagoon Creek	OK620900-01-0180J	38268	10-Sep-07	5.75	68.9	120.0	I	78	24.4		7.5	15.6	12.2	0.0106	0.20	0.01	0.49	0.225	0.704	167	84.7	0.041	0.109	46	24.91
Lagoon Creek	OK620900-01-0180J	38424	15-Oct-07	6.31	67.6	21.1	I	165	18.8	404.7		41.3	20.0	0.0106	0.04	0.12	0.08	0.171	0.238	281	199.5	0.012	0.049	15	1.27
Lagoon Creek	OK620900-01-0180J	38554	13-Nov-07	7.37	72.2	8.5	O	217	15.2	743.0		72.9	32.8	0.0106	0.01	0.17	0.22	0.195	0.404	417	273.5	0.017	0.048	7	0.00
Lagoon Creek	OK620900-01-0180J	38712	17-Dec-07	13.13	95.6	40.6	I	94	2.2	315.6	7.8	27.1	17.2	0.0106	0.33	0.01	0.08	0.355	0.422	207	109.2	0.051	0.102	7	13.28
Lagoon Creek	OK620900-01-0180J	39192	22-Jan-08	12.04	89.9	11.1	O	224	3.6	724.0	7.7	76.8	36.0	0.0106	0.01	0.01	0.08	0.039	0.106	417	273.9	0.007	0.030	7	2.11
Lagoon Creek	OK620900-01-0180J	39650	03-Mar-08	10.42	88.8	761.0	I	84	8.3	282.2	7.3	25.6	20.2	0.0490	0.51	0.01	1.55	0.573	2.074	230	98.9	0.145	0.461	621	
Lagoon Creek	OK620900-01-0180J	39945	07-Apr-08	8.87	92.0	6.4	O	244	17.0	617.0	8.1	75.4	33.6	0.0106	0.01	0.01	0.08	0.039	0.106	426	295.7	0.006	0.014	7	10.90
Lagoon Creek	OK620900-01-0180J	40271	12-May-08	8.22	91.6	18.0	I	137	20.6	399.0	7.7	29.9	20.2	0.0106	0.01	0.01	0.08	0.039	0.106	247	180.9	0.013	0.045	17	35.27
Lagoon Creek	OK620900-01-0180J	40495	17-Jun-08	7.42	82.5	133.0	I	139	20.9	145.8	7.2	8.2	5.5	0.0106	0.10	0.01	0.08	0.125	0.192	140	112.0	0.040	0.138	69	
Lagoon Creek	OK620900-01-0180J	40953	22-Jul-08	6.14	80.7	9.8	O	164	29.6	393.2	7.7	28.1	18.8	0.0106	0.01	0.01	0.55	0.039	0.578	246	170.0	0.007	0.036	7	1.12
Lagoon Creek	OK620900-01-0180J	41242	26-Aug-08	9.10	116.6	9.9	O	170	28.1	490.0	8.1	31.3	24.2	0.0106	0.01	0.01	0.08	0.039	0.106	288	188.0	0.004	0.040	7	0.40
Lagoon Creek	OK620900-01-0180J	41581	30-Sep-08	5.40	54.3	4.6	O	189	16.3	560.0	7.3	35.7	31.9	0.0106	0.01	0.01	0.08	0.039	0.106	331	245.0	0.004	0.029	7	0.16
Lagoon Creek	OK620900-01-0180J	42027	03-Nov-08	9.28	103.5	1.6	O	215	20.8	594.0	7.8	46.5	37.9	0.0106	0.01	0.01	0.35	0.039	0.378	338	235.0	0.006	0.022	7	0.03
Lagoon Creek	OK620900-01-0180J	42299	15-Dec-08	9.12	67.3	12.0	O	132	2.8	286.2	7.4	56.1	29.9	0.0106	0.01	0.01	0.43	0.039	0.458	301	270.0	0.013	0.015	7	0.00
Lagoon Creek	OK620900-01-0180J	42782	02-Feb-09	12.24	95.6	5.2	O	191	4.9	361.4	8.0	58.9	38.3	0.0106	0.01	0.01	0.32	0.039	0.348	348	236.0	0.007	0.034	7	0.78
Lagoon Creek	OK620900-01-0180J	43002	02-Mar-09	13.77	118.8	3.4	O	218	8.9	789.0	8.5	144.7	38.5	0.0106	0.01	0.01	0.66	0.039	0.688	451	275.0	0.006	0.047	7	0.27
Lagoon Creek	OK620900-01-0180J	43364	14-Apr-09	10.40	96.9	71.5	I	86	12.2	169.1	7.9	13.5	10.4	0.0106	0.07	0.01	1.39	0.095	1.474	187	100.0	0.026	0.127	14	
Long Creek	OK620920-02-0080D	37209	05-Jun-07	9.80	111.8	9.9	I	163	21.8	2923.0	8.0	183.6	1227.7	0.0106	0.10	0.01	0.41	0.125	0.524	2577	1507.2	0.007	0.018	16	1.06
Long Creek	OK620920-02-0080D	37175	12-Jun-07	12.11	160.7	8.2	I	146	30.1	3124.0	8.0														2.92
Long Creek	OK620920-02-0080D	37745	10-Jul-07			30.7						147.1	1025.4	0.0106	0.23	0.01	0.43	0.255	0.674	2186	1385.3	0.027	0.055	30	8.96

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Long Creek	OK620920-02-0080D	38001	07-Aug-07	7.46	91.5	3.1	O	150	25.7	3078.0	7.8	189.9	1435.9	0.0106	0.16	0.01	0.37	0.185	0.544	2863	1986.9	0.005	0.014	7	2.51
Long Creek	OK620920-02-0080D	38295	18-Sep-07	8.45	96.9	9.7	I	151	22.2	3139.0	7.8	290.6	2014.2	0.0106	0.21	0.01	0.40	0.235	0.624	3061	1801.3	0.005	0.021	12	0.62
Long Creek	OK620920-02-0080D	38449	23-Oct-07	10.06	85.5	4.9	O	160	8.2	3391.0	8.1	184.1	1902.1	0.0106	0.26	0.45	0.25	0.721	0.960	2950	1872.5	0.007	0.020	11	2.60
Long Creek	OK620920-02-0080D	38608	27-Nov-07	13.51	98.2	4.2		177		2692.0	8.0	194.2	1417.7	0.0106	0.59	0.01	0.24	0.615	0.844	2438	1508.9	0.006	0.016	7	1.49
Long Creek	OK620920-02-0080D	39105	08-Jan-08	11.58	90.3	44.0	I	208	4.8	2781.0	8.0	184.5	1294.8	0.0106	0.66	0.01	0.38	0.685	1.054	2273	1439.0	0.010	0.049	29	2.76
Long Creek	OK620920-02-0080D	39440	05-Feb-08	11.61	39.5	13.1	I	195	4.4	2750.0	8.0	191.9	1280.0	0.0106	0.66	0.01	0.25	0.685	0.924	2207	1279.6	0.008	0.018	19	1.12
Long Creek	OK620920-02-0080D	39707	11-Mar-08	11.33	86.5	8.4	O	175	4.0	2545.0	8.0	190.3	1375.7	0.0106	0.35	0.01	0.12	0.375	0.484	2404	1444.4	0.008	0.014	7	2.02
Long Creek	OK620920-02-0080D	40029	15-Apr-08	10.91	96.5	10.7	O	182	9.9	2949.0	8.0	212.4	1296.0	0.0106	0.09	0.01	0.42	0.115	0.524	2407	1550.9	0.005	0.028	7	1.39
Long Creek	OK620920-02-0080D	40311	20-May-08	5.83	64.8	34.6	I	151	20.4	3377.0	7.6	279.2	1327.8	0.0106	0.12	0.01	0.61	0.145	0.744	2878	2402.3	0.020	0.042	34	0.00
Long Creek	OK620920-02-0080D	40557	23-Jun-08	5.91	68.7	38.1	I	140	23.1	3336.0	7.2	241.2	1476.3	0.0106	0.11	0.01	0.49	0.135	0.614	3019	1775.0	0.025	0.078	17	0.00
Long Creek	OK620920-02-0080D	41009	28-Jul-08	4.16	53.2	40.4	I	114	28.0	2927.0	7.6	335.1	1934.3	0.0106	0.01	0.01	0.27	0.039	0.298	3504	1900.0	0.011	0.048	31	0.00
Long Creek	OK620920-02-0080D	41398	02-Sep-08	7.44	70.0	29.7	I		25.0	2969.0	7.6	293.9	1558.4	0.0106	0.01	0.01	0.34	0.039	0.368	3471	1940.0	0.016	0.033	16	
Long Creek	OK620920-02-0080D	41785	06-Oct-08	8.57	93.8	22.8	I	116	16.7	2178.0	7.9	180.5	1371.6	0.0106	0.13	0.01	0.08	0.155	0.222	2437	1670.0	0.014	0.026	7	1.26
Long Creek	OK620920-02-0080D	42089	17-Nov-08	12.93	110.9	50.7	I	150	8.7	1530.0	8.1	258.4	1515.7	0.0106	0.21	0.01	0.42	0.235	0.644	2748	1700.0	0.022	0.046	45	1.18
Long Creek	OK620920-02-0080D	42310	15-Dec-08	15.80	109.3	7.0	O	199	0.4	3127.0	7.9	247.2	1353.1	0.0106	0.35	0.01	0.42	0.375	0.784	2677	1190.0	0.006	0.016	7	
Long Creek	OK620920-02-0080D	42840	09-Feb-09	10.96	102.2	11.8	I	174	12.1	1344.0	8.1	209.7	1511.1	0.0106	0.39	0.01	0.36	0.415	0.764	2417	1390.0	0.009	0.032	7	
Long Creek	OK620920-02-0080D	43006	02-Mar-09	12.85	100.1	4.3	I	176	4.8	1226.0	8.1	244.0	1760.3	0.0106	0.22	0.01	0.39	0.245	0.624	2389	1420.0	0.004	0.033	7	1.29
Long Creek	OK620920-02-0080D	43373	13-Apr-09	11.91	108.0	7.0	I	169	11.1	1509.0	8.1	226.7	1485.3	0.0106	0.13	0.01	0.27	0.155	0.414	2018	1140.0	0.009	0.019	7	
Main Creek	OK620920-01-0180F	37200	04-Jun-07	7.95	89.3	82.3	I	180	21.3	3150.0	7.9	202.5	1341.2	0.0106	0.39	0.01	0.53	0.415	0.934	2843	1813.1	0.059	0.111	73	6.65
Main Creek	OK620920-01-0180F	37174	12-Jun-07	7.56	90.5	80.9	I	175	24.4	3000.0	7.9														13.11
Main Creek	OK620920-01-0180F	37738	09-Jul-07	7.60	90.0	25.1	I	210	23.9	3311.0	7.9	177.5	1413.2	0.0106	0.67	0.01	0.31	0.695	0.994	3108	1999.0	0.039	0.063	36	27.76
Main Creek	OK620920-01-0180F	37992	06-Aug-07	7.35	87.5	7.2	I	175	24.1	2637.0	7.9	199.0	1616.2	0.0106	0.40	0.01	0.19	0.425	0.604	3080	1997.7	0.006	0.022	20	9.17
Main Creek	OK620920-01-0180F	38286	17-Sep-07	7.80	85.9	35.3	I	185	20.1	3370.0	8.0	292.4	2008.7	0.0106	0.57	0.01	0.38	0.595	0.964	3109	1955.6	0.028	0.056	50	8.51
Main Creek	OK620920-01-0180F	38450	23-Oct-07	9.55	85.7	10.7	O	175	10.5	3275.0	8.1	200.3	1588.1	0.0106	0.57	0.48	0.27	1.061	1.320	3034	1854.7	0.007	0.023	21	7.62
Main Creek	OK620920-01-0180F	38599	26-Nov-07	10.94	79.1	4.7	I	175	2.0	3586.0	8.1	218.4	1787.7	0.0106	0.61	0.01	0.08	0.635	0.702	3067	2108.5	0.008	0.021	11	4.72
Main Creek	OK620920-01-0180F	39106	08-Jan-08	11.52	92.2	7.4	O	193	5.8	3402.0	8.1	229.2	1620.5	0.0106	0.57	0.01	0.28	0.595	0.864	3015	2022.0	0.008	0.026	14	7.86
Main Creek	OK620920-01-0180F	39441	05-Feb-08	11.17	87.4	10.5	I	182	5.0	2679.0	8.1	224.1	1678.0	0.0106	0.53	0.01	0.22	0.555	0.764	2883	1919.0	0.008	0.015	20	5.81
Main Creek	OK620920-01-0180F	39708	11-Mar-08	11.79	95.1	3.2	O	184	6.2	3565.0	8.1	217.5	1826.2	0.0106	0.38	0.01	0.08	0.405	0.472	3045	2162.9	0.006	0.012	7	8.26
Main Creek	OK620920-01-0180F	40030	15-Apr-08	11.36	103.6	6.1	O	200	11.2	2365.0	7.9	233.1	1496.9	0.0106	0.06	0.01	0.65	0.085	0.724	2995	2079.3	0.004	0.032	7	13.38
Main Creek	OK620920-01-0180F	40288	19-May-08	8.27	102.7	42.2	I	155	26.4	2836.0	7.9	305.0	1641.1	0.0106	0.35	0.01	0.37	0.375	0.734	3092	2416.6	0.015	0.072	73	4.12
Main Creek	OK620920-01-0180F	40566	24-Jun-08	7.95	99.2	27.8	I	134	26.6	2604.0	8.1	296.5	1603.2	0.0106	0.21	0.01	0.35	0.235	0.574	3057	1690.0	0.015	0.042	37	3.88
Main Creek	OK620920-01-0180F	41008	28-Jul-08	7.88	95.7	11.9	I	92	25.2	2988.0	8.0	369.9	1761.8	0.0106	0.01	0.01	0.12	0.039	0.148	3401	2075.0	0.006	0.028	16	18.48
Main Creek	OK620920-01-0180F	41397	02-Sep-08	7.97	98.1	16.6	I	108	25.8	3200.0	7.9	376.8	1817.6	0.0106	0.01	0.01	0.13	0.039	0.158	3261	1810.0	0.014	0.034	24	2.57
Main Creek	OK620920-01-0180F	41784	06-Oct-08	7.42	78.2	1000.0	I	91	18.0	2021.0	7.6	79.1	1030.4	0.0106	0.29	0.01	0.82	0.315	1.124	1795	995.0	0.621	0.952	1114	
Main Creek	OK620920-01-0180F	42087	17-Nov-08	11.12	94.6	6.6	I	185	8.3	1629.0	8.0	259.4	1672.4	0.0106	0.46	0.01	0.33	0.485	0.804	3061	1980.0	0.004	0.022	7	12.03
Main Creek	OK620920-01-0180F	42309	15-Dec-08	13.66	93.3	4.4		179	0.1	3404.0	8.0	258.4	1727.5	0.0106	0.42	0.01	0.38	0.445	0.814	3164	2445.0	0.008	0.010	7	5.55
Main Creek	OK620920-01-0180F	42839	09-Feb-09	10.66	99.9	13.6	I	181	12.4	1350.0	8.1	221.3	1841.7	0.0106	0.44	0.01	0.40	0.465	0.854	2933	1580.0	0.014	0.028	16	
Main Creek	OK620920-01-0180F	43005	02-Mar-09	12.81	99.8	4.2	I	169	4.8	1251.0	8.1	220.5	1944.3	0.0106	0.20	0.01	0.21	0.225	0.424	2966	1660.0	0.006	0.046	7	8.69
Main Creek	OK620920-01-0180F	43371	13-Apr-09	11.09	101.2	24.9	I	175	11.3	2086.0	8.0	200.2	1808.1	0.0106	0.18	0.01	0.87	0.205	1.064	2933	1870.0	0.010	0.050	30	
Medicine Lodge River	OK621010-03-0010D	37213	04-Jun-07	7.36	91.8	215.0	I	156	26.9	1024.0	8.1	44.2	379.7	0.0106	0.41	0.01	0.83	0.435	1.254	882	543.0	0.224	0.317	219	
Medicine Lodge River	OK621010-03-0010D	37828	10-Jul-07	5.39	66.8	92.6	I	205	26.1	1468.0		197.5	450.7	0.0106	0.67	0.01	0.43	0.695	1.114	1081	658.3	0.112	0.182	109	124.56
Medicine Lodge River	OK621010-03-0010D	38015	06-Aug-07	6.98	96.0	54.2	I	180	32.2	1408.0	8.1	96.3	320.5	0.0106	0.59	0.01	0.27	0.615	0.874	953	557.8	0.059	0.118	70	89.94
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	7.26	87.3	89.3	I	152	24.7	1034.0	8.1														84.07
Medicine Lodge River	OK621010-03-0010D	38312	18-Sep-07	7.92	89.0	13.3	O	166	21.0		8.1	102.1	303.7	0.0106	2.18	0.01	0.29	2.205	2.484	816	462.0	0.018	0.042	19	29.70
Medicine Lodge River	OK621010-03-0010D	38457	23-Oct-07	11.35	95.8	9.4	O	198	8.0		8.3	128.1	260.4	0.0106	0.31	0.31	0.11	0.631	0.730	661	399.2	0.016	0.036	12	46.28
Medicine Lodge River	OK621010-03-0010D	38614	27-Nov-07	12.94	91.9	12.2	O	248	1.3		8.5	78.0	276.1	0.0106	0.64	0.17	0.08	0.821	0.888	628	390.1	0.016	0.028	17	76.03
Medicine Lodge River	OK621010-03-0010D	39109	07-Jan-08	11.42	93.0	46.2	I	211	6.6	1013.0	8.4	75.6	181.4	0.0170	1.46	0.01	0.24	1.491	1.714	651	424.7	0.048	0.118	80	105.14
Medicine Lodge River	OK621010-03-0010D	39449	05-Feb-08	12.00	92.8	32.8	I	207	4.5	926.0	8.6	433.7	296.2	0.0106	1.34	0.01	0.55	1.365	1.904	663	415.0	0.047	0.067	50	103.16
Medicine Lodge River	OK621010-03-0010D	39711	10-Mar-08	11.36	96.1	16.6	I	196	8.0	900.0	8.5	70.8	206.5	0.0106	1.06	0.01	0.08	1.085	1.152	664	412.7	0.027	0.057	26	
Medicine Lodge River	OK621010-03-0010D	40037	15-Apr-08	11.55	111.4	24.9	I	192	13.7	1025.0	8.4	86.3	281.2	0.0106	0.49	0.01	0.36	0.515	0.864	686	447.8	0.032	0.074	45	103.45
Medicine Lodge River	OK621010-03-0010D	40302	19-May-08	8.89	101.5	98.1		185	21.8	685.0	8.3	82.6	218.8	0.0106	0.69	0.01	0.35	0.715	1.054	730	529.6	0.109	0.192	149	100.18

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Medicine Lodge River	OK621010-03-0010D	40541	23-Jun-08	7.48	93.1	136.0	I	197	26.8	999.0	8.4	89.3	320.0	0.0106	0.59	0.01	0.32	0.615	0.924	900	415.0	0.168	0.249	128	113.40
Medicine Lodge River	OK621010-03-0010D	40998	28-Jul-08	7.95	102.8	7.4		157	28.8	1241.0	8.3	130.9	278.9	0.0106	0.13	0.01	0.08	0.155	0.222	888	462.0	0.026	0.044	7	8.69
Medicine Lodge River	OK621010-03-0010D	41387	02-Sep-08			2.6	O	163	26.8	1170.0		130.3	265.8	0.0800	0.12	0.01	0.19	0.214	0.324	835	410.0	0.040	0.057	7	0.41
Medicine Lodge River	OK621010-03-0010D	41778	07-Oct-08	4.68	48.2	1000.0	I	120	16.8	750.0		56.4	156.4	0.0340	0.68	0.01	1.68	0.728	2.374	542	175.0	0.312	0.778	659	
Medicine Lodge River	OK621010-03-0010D	42078	17-Nov-08	11.63	99.6	21.8	I	239	8.5	1308.0	8.4	100.2	317.9	0.0106	0.80	0.01	0.39	0.825	1.204	932	594.0	0.061	0.088	23	
Medicine Lodge River	OK621010-03-0010D	42369	30-Dec-08	13.23	100.0	14.1	I	241	4.0	1085.0	4.5	59.4	374.8	0.0106	0.81	0.01	0.41	0.835	1.234	869	4.0	0.038	0.071	18	
Medicine Lodge River	OK621010-03-0010D	42833	10-Feb-09	11.18	96.5	15.8	O	211	8.8	816.0	8.3	96.1	336.0	0.0106	1.20	0.01	0.29	1.225	1.504	774	562.0	0.037	0.088	22	
Medicine Lodge River	OK621010-03-0010D	43038	09-Mar-09	9.86	89.4	8.0	O	189	10.9	1143.0	8.4	95.2	332.8	0.0106	0.77	0.01	0.76	0.795	1.544	741	462.0	0.019	0.102	11	89.81
Medicine Lodge River	OK621010-03-0010D	43352	13-Apr-09	10.50	92.4	44.2	I	199	9.7	1165.0	8.5	84.8	370.6	0.0106	0.69	0.01	0.57	0.715	1.274	817	546.0	0.050	0.333	65	
Otter Harper	OK720500-02-0050B	37194	05-Jun-07	5.40	58.9	4.8	O	294	19.6	2263.0	7.6	237.3	393.4	0.0106	0.01	0.01	0.33	0.039	0.358	1464	732.2	0.040	0.063	7	2.37
Otter Harper	OK720500-02-0050B	37181	28-Jun-07	6.29	71.4	7.8	O	265	21.5	2046.0	7.6														2.18
Otter Harper	OK720500-02-0050B	37730	10-Jul-07	5.44	63.2	6.8	I	280	23.0	2012.0	7.7	243.6	336.7	0.0106	0.01	0.01	0.53	0.039	0.558	1315	578.8	0.037	0.064	7	1.57
Otter Harper	OK720500-02-0050B	37978	07-Aug-07	6.20	73.2	18.0	I	268	23.7	1914.0	7.9	234.8	313.7	0.0106	0.01	0.01	0.58	0.039	0.608	1201	559.2	0.023	0.051	16	0.06
Otter Harper	OK720500-02-0050B	38619	26-Nov-07	12.70	88.4	7.3	O	280	0.6		8.2	186.4	214.0	0.0190	0.19	0.01	0.36	0.223	0.564	967	465.0	0.019	0.025	7	1.69
Otter Harper	OK720500-02-0050B	39124	08-Jan-08	9.54	74.4	5.6		255	4.9	1753.0	8.0	199.8	264.2	0.0106	0.06	0.01	0.43	0.085	0.504	1027	510.3	0.016	0.038	7	2.83
Otter Harper	OK720500-02-0050B	39462	05-Feb-08	9.57	74.5	4.0	I	256	4.7	1704.0	8.1	201.6	249.4	0.0106	0.01	0.01	0.21	0.039	0.238	1053	460.3	0.012	0.019	7	2.20
Otter Harper	OK720500-02-0050B	39726	11-Mar-08	10.00	76.5	3.6	O	258	4.1	1792.0	8.1	193.4	297.1	0.0106	0.01	0.01	0.30	0.039	0.328	1031	518.8	0.010	0.020	7	1.73
Otter Harper	OK720500-02-0050B	40048	15-Apr-08	8.87	76.5	4.2	O	249	8.9	1785.0	8.0	210.5	269.7	0.0106	0.01	0.01	0.50	0.039	0.528	1078	518.6	0.009	0.033	7	1.62
Otter Harper	OK720500-02-0050B	40255	13-May-08	7.35	72.5	11.7	O	233	14.7	1751.0	7.9	231.6	265.0	0.0106	0.01	0.01	0.55	0.039	0.578	1064	572.2	0.012	0.032	7	0.80
Otter Harper	OK720500-02-0050B	40503	17-Jun-08	6.36	69.1	32.9	I	209	19.6	1652.0	7.8	392.1	410.3	0.0106	0.01	0.01	1.99	0.039	2.018	1239	504.0	0.124	0.201	35	0.02
Otter Harper	OK720500-02-0050B	40940	21-Jul-08	6.75	93.0	5.5	O	242	32.4	1691.0	8.2	357.6	280.6	0.0106	0.01	0.01	0.70	0.039	0.728	1079	505.0	0.011	0.053	7	0.02
Otter Harper	OK720500-02-0050B	41250	26-Aug-08	6.18	67.5	4.6	I	193	19.7	1700.0	7.8	254.0	289.1	0.0106	0.01	0.01	0.65	0.039	0.678	1070	480.0	0.015	0.091	7	0.02
Otter Harper	OK720500-02-0050B	41591	30-Sep-08	3.60	34.1	5.2	O	322	13.2	2818.0	7.5	544.2	455.4	0.0106	0.01	0.01	0.38	0.039	0.408	1821	845.0	0.006	0.028	7	0.00
Otter Harper	OK720500-02-0050B	42004	04-Nov-08	7.74	73.2	3.3	I	259	12.9	1790.0	7.7	222.6	285.4	0.0106	0.01	0.01	0.62	0.039	0.648	1126	530.0	0.013	0.028	7	0.56
Otter Harper	OK720500-02-0050B	42385	30-Dec-08	11.73	85.6	2.3	O	249	2.4	1547.0	7.9	266.3	292.0	0.0106	0.01	0.01	0.37	0.039	0.398	1060	550.0	0.007	0.024	7	0.90
Otter Harper	OK720500-02-0050B	42798	03-Feb-09	10.76	73.7	3.6	O	233	0.1		8.1	294.5	406.8	0.0106	0.07	0.01	0.45	0.095	0.534	961	490.0	0.007	0.050	7	
Otter Harper	OK720500-02-0050B	43065	10-Mar-09	9.07	76.9	4.1	O	259	8.1	1378.0	8.0	226.0	292.9	0.0106	0.09	0.01	0.51	0.115	0.614	980	475.0	0.008	0.038	7	1.14
Otter Harper	OK720500-02-0050B	43309	07-Apr-09	8.94	67.1	2.8	O	274	3.4	1898.0	8.1	340.7	291.9	0.0106	0.01	0.01	0.77	0.039	0.798	1091	560.0	0.009	0.103	7	
Otter Logan	OK620910-03-0040C	37143	30-May-07	6.42	71.6		I		20.2	262.6	7.0	17.6	13.8	0.0460	0.33	0.01	5.18	0.390	5.524	485	101.0	0.479	2.383	7600	
Otter Creek: Logan Co.	OK620910-03-0040C	37323	26-Jun-07	7.44	92.8	26.2	I	249	26.5	838.0	7.8	70.8	54.4	0.0106	0.18	0.01	0.84	0.205	1.034	479	280.0	0.148	0.219	28	43.73
Otter Creek: Logan Co.	OK620910-03-0040C	37811	31-Jul-07	8.76	118.3	7.8	I	359	30.9	1191.0	8.2	114.7	94.6	0.0106	0.17	0.01	0.08	0.195	0.262	673	383.5	0.041	0.063	15	13.43
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	5.58	69.4	14.4	I	255	26.5	971.0	8.0														4.84
Otter Logan	OK620910-03-0040C	38258	11-Sep-07	6.72	77.6	489.0	I	68	22.5	268.2	7.8	18.5	16.1	0.0370	1.72	0.08	1.15	1.837	2.950	151	86.4	0.330	0.565	305	
Otter Creek: Logan Co.	OK620910-03-0040C	38408	15-Oct-07	8.64	95.5	42.1	I	344	19.9		8.4	129.3	100.8	0.0106	0.29	0.31	0.37	0.611	0.970	679	384.6	0.053	0.115	42	9.24
Otter Creek: Logan Co.	OK620910-03-0040C	38553	14-Nov-07	11.24	111.3	9.5	O	378	14.9	1188.0	8.4	110.8	82.1	0.0106	0.10	0.20	0.47	0.311	0.770	687	404.7	0.030	0.087	7	11.44
Otter Creek: Logan Co.	OK620910-03-0040C	38730	18-Dec-07	16.09	123.8	10.6		324	4.3	1415.0	8.5	173.2	111.6	0.0106	1.19	0.01	0.64	1.215	1.844	714	453.7	0.071	0.105	7	15.70
Otter Creek: Logan Co.	OK620910-03-0040C	39185	23-Jan-08	19.96	142.6	10.1		350	1.7			143.9	94.7	0.0106	0.80	0.01	0.59	0.825	1.404	728	390.6	0.056	0.093	7	5.67
Otter Creek: Logan Co.	OK620910-03-0040C	39645	04-Mar-08	11.97	101.6	126.0	I	289	8.3	1031.0	8.3	109.7	94.0	0.0190	0.88	0.01	0.45	0.913	1.344	610	332.8	0.080	0.149	53	39.83
Otter Creek: Logan Co.	OK620910-03-0040C	39924	07-Apr-08	10.25	101.1	19.8	I	336	14.8	1315.0	8.4	176.5	137.9	0.0106	0.57	0.01	0.56	0.595	1.144	677	382.7	0.012	0.047	14	29.23
Otter Creek: Logan Co.	OK620910-03-0040C	40248	13-May-08	9.53	109.4	34.1	I	250	22.3	793.0	8.2	69.7	59.3	0.0106	0.77	0.01	0.34	0.795	1.124	442	322.9	0.104	0.201	29	26.12
Otter Logan	OK620910-03-0040C	40485	17-Jun-08	6.60	75.0	1000.0	I	90	21.3	285.5	7.6	35.0	29.0	0.0106	0.57	0.01	2.84	0.595	3.424	329	84.0	0.847	2.065	6082	
Otter Creek: Logan Co.	OK620910-03-0040C	40932	22-Jul-08	8.84	120.9	13.8	O	283	30.9	819.0	8.3	68.3	52.7	0.0106	0.01	0.01	0.50	0.039	0.528	473	292.0	0.065	0.124	7	
Otter Creek: Logan Co.	OK620910-03-0040C	41219	25-Aug-08	8.83	110.6	27.1	O	292	26.8	946.0	8.3	102.3	71.8	0.0106	0.10	0.01	0.70	0.125	0.814	536	285.0	0.032	0.107	19	3.15
Otter Creek: Logan Co.	OK620910-03-0040C	41565	29-Sep-08	11.17	131.3	17.1	O	329	23.3	1055.0	8.4	100.4	83.0	0.0106	0.20	0.01	0.08	0.225	0.292	619	312.0	0.023	0.095	7	1.92
Otter Creek: Logan Co.	OK620910-03-0040C	42011	03-Nov-08	12.80	133.5	17.5	O	361	17.4	1147.0	8.4	110.5	78.6	0.0106	0.13	0.01	0.50	0.155	0.644	638	356.0	0.027	0.071	11	3.02
Otter Creek: Logan Co.	OK620910-03-0040C	42295	16-Dec-08	15.96	112.3	5.0	O	390	0.8		8.4	102.1	97.4	0.0106	0.58	0.01	0.43	0.605	1.024	682	498.0	0.029	0.049	7	
Otter Creek: Logan Co.	OK620910-03-0040C	42775	03-Feb-09	14.16	106.8	4.6	O	395	3.5	1196.0	8.3	131.4	93.6	0.0106	0.07	0.01	0.50	0.095	0.584	661	476.0	0.020	0.043	7	3.40
Otter Creek: Logan Co.	OK620910-03-0040C	42986	02-Mar-09			14.6	O	372		1174.0	8.3	152.2	123.4	0.0106	0.07	0.01	0.62	0.095	0.704	684	448.0	0.025	0.080	7	
Otter Creek: Logan Co.	OK620910-03-0040C	43300	07-Apr-09	15.36	145.7	23.3	O	319	13.0	1274.0	8.7	181.0	144.7	0.0106	0.52	0.01	1.14	0.545	1.674	709	390.0	0.025	0.123	12	
Palo Duro Creek	OK720500-02-0500G	37189	04-Jun-07	3.74	44.0	1.3	O	262	23.5	2539.0	7.5	447.6	252.1	0.0106	0.01	0.01	0.48	0.039	0.508	1449	499.3	0.004	0.031	7	0.73
Palo Duro Creek	OK720500-02-0500G	37300	26-Jun-07	3.32	41.5		O		26.7																

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Palo Duro Creek	OK720500-02-0500G	37179	27-Jun-07	2.24	27.4	1.4	O	253	25.9	2776.0	7.2														0.76
Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	4.46	52.9	53.0	O	247	26.6	2254.0	7.6	541.9	282.9	0.0190	0.01	0.01	1.98	0.047	2.008	1775	555.0	0.109	0.330	79	2.04
Palo Duro Creek	OK720500-02-0500G	37973	06-Aug-07	4.67	60.2	1.5	O	178	28.5	2993.0	7.7	517.2	312.5	0.0106	0.07	0.01	0.58	0.095	0.664	1745	540.9	0.010	0.029	7	0.06
Palo Duro Creek	OK720500-02-0500G	38297	10-Sep-07	5.71	66.1	1.6	O	176	22.5	3055.0	7.7	588.0	362.8	0.0106	0.01	0.01	0.63	0.039	0.658	1760	595.8	0.008	0.021	7	0.11
Palo Duro Creek	OK720500-02-0500G	38463	22-Oct-07	8.16	75.0	4.2	O	189	11.4	3364.0	8.1	577.5	314.1	0.0106	0.12	0.01	0.50	0.145	0.634	2019	634.2	0.004	0.026	7	0.00
Palo Duro Creek	OK720500-02-0500G	38625	27-Nov-07	10.78	80.8	1.5	O	305	3.3	2799.0	8.0	584.2	368.3	0.0106	0.01	0.01	0.27	0.039	0.298	1791	614.1	0.007	0.016	7	0.63
Palo Duro Creek	OK720500-02-0500G	39119	07-Jan-08	11.70	87.9	1.0	O	242	3.4	2553.0	8.1	525.4	237.8	0.0106	0.01	0.01	0.15	0.039	0.178	1446	510.1	0.007	0.013	7	1.71
Palo Duro Creek	OK720500-02-0500G	39454	04-Feb-08	12.25	96.5	1.2	O	270	5.2	2042.0	8.2	515.7	342.0	0.0106	0.01	0.01	0.14	0.039	0.168	1582	557.9	0.019	0.020	7	0.80
Palo Duro Creek	OK720500-02-0500G	39721	10-Mar-08	12.97	107.1	2.2	O	262	7.0	2002.0	8.2	492.0	408.2	0.0106	0.01	0.01	0.18	0.039	0.208	1626	569.6	0.008	0.014	7	0.85
Palo Duro Creek	OK720500-02-0500G	40043	14-Apr-08	10.10	95.5	4.1	O	253	12.8	2704.0	8.0	549.9	351.9	0.0106	0.01	0.01	0.52	0.039	0.548	1681	634.2	0.009	0.020	7	0.79
Palo Duro Creek	OK720500-02-0500G	40250	12-May-08	9.70	101.4	4.3	O	220	17.5	2061.0	7.9	592.0	311.6	0.0106	0.01	0.01	0.41	0.039	0.438	1635	613.2	0.004	0.009	7	0.48
Palo Duro Creek	OK720500-02-0500G	40498	16-Jun-08	3.90	45.5	3.3	O	141	24.3	3218.0	7.8	892.7	391.6	0.0106	0.01	0.01	1.25	0.039	1.278	1918	492.0	0.009	0.047	7	0.00
Palo Duro Creek	OK720500-02-0500G	40935	21-Jul-08	5.28	64.3	4.7	O	132	25.3	3624.0	7.8	897.1	493.9	0.0106	0.01	0.01	1.38	0.039	1.408	2254	550.0	0.005	0.086	17	
Palo Duro Creek	OK720500-02-0500G	41245	25-Aug-08	6.68	82.5	7.5	O	183	26.0	2987.0	7.7	678.1	305.7	0.0106	0.01	0.01	0.64	0.039	0.668	1755	512.0	0.005	0.041	7	0.01
Palo Duro Creek	OK720500-02-0500G	41586	29-Sep-08	5.10	56.1	9.6	O	231	19.9	2659.0	7.6	640.5	328.7	0.0106	0.01	0.01	0.68	0.039	0.708	1905	615.0	0.004	0.035	7	
Palo Duro Creek	OK720500-02-0500G	41998	03-Nov-08	8.74	83.2	3.9	O	276	13.1	2320.0	8.0	555.3	308.7	0.0106	0.01	0.01	0.50	0.039	0.528	1750	595.0	0.004	0.016	7	0.42
Palo Duro Creek	OK720500-02-0500G	42380	29-Dec-08	11.05	82.5	1.6	O	276	3.2	1283.0	8.0	595.3	326.7	0.0106	0.01	0.01	0.53	0.039	0.558	1608	560.0	0.004	0.018	7	0.94
Palo Duro Creek	OK720500-02-0500G	42792	02-Feb-09	12.49	93.2	1.8	O	265	3.1	1489.0	7.9	792.0	413.3	0.0106	0.01	0.01	0.23	0.039	0.258	1606	545.0	0.013	0.021	7	
Palo Duro Creek	OK720500-02-0500G	43056	09-Mar-09	6.29	58.6	3.6	O	282	12.1	1651.0	7.8	737.9	322.8	0.0106	0.01	0.01	0.48	0.039	0.508	1621	560.0	0.004	0.035	7	1.47
Palo Duro Creek	OK720500-02-0500G	43303	06-Apr-09	10.73	94.4	3.3	O	255	9.7	1480.0	8.0	470.2	256.7	0.0106	0.01	0.01	0.80	0.039	0.828	1436	460.0	0.010	0.111	7	
Persimmon Creek	OK720500-01-0150G	37202	04-Jun-07	3.87	45.1	92.0	I	288	22.3	762.0	8.1	40.9	209.6	0.0106	0.43	0.01	0.98	0.455	1.424	653	368.2	0.168	0.249	134	7.34
Persimmon Creek	OK720500-01-0150G	37736	09-Jul-07	7.11	84.6	26.7	O	287	23.9	1079.0	8.3	57.4	241.4	0.0106	0.92	0.01	0.45	0.945	1.384	751	490.2	0.131	0.181	38	7.39
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	7.64	86.1	45.6	I	250	24.2	690.0	8.3														9.74
Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	7.51	90.7	22.6	I	270	24.9	1006.0	8.3	58.1	246.5	0.0106	1.09	0.01	0.29	1.115	1.394	712	456.9	0.161	0.211	41	9.43
Persimmon Creek	OK720500-01-0150G	38288	17-Sep-07	7.71	85.8	23.1	I	278	20.5	909.0	8.4	57.5	177.5	0.0106	1.23	0.01	0.39	1.255	1.634	670	412.0	0.098	0.142	35	15.65
Persimmon Creek	OK720500-01-0150G	38442	22-Oct-07	10.09	90.9	7.5	I	259	10.6	910.0	8.5	52.9	196.2	0.0106	0.71	0.16	0.20	0.881	1.070	599	393.2	0.057	0.079	7	15.39
Persimmon Creek	OK720500-01-0150G	38601	26-Nov-07	12.76	96.9	9.5	I	300	3.8	933.0	8.5	43.7	120.1	0.0106	0.72	0.14	0.08	0.871	0.938	608	427.7	0.040	0.080	11	20.40
Persimmon Creek	OK720500-01-0150G	39098	07-Jan-08	10.47	88.5	26.2	I	313	8.2	955.0	8.3	45.9	273.1	0.0106	0.58	0.01	0.39	0.605	0.984	624	433.8	0.050	0.109	45	13.58
Persimmon Creek	OK720500-01-0150G	39433	04-Feb-08	13.06	103.2	25.4	I	313	5.2	935.0	8.4	44.4	279.3	0.0106	0.55	0.01	0.08	0.575	0.642	595	383.3	0.039	0.080	51	27.16
Persimmon Creek	OK720500-01-0150G	39700	10-Mar-08	11.43	90.1	13.3	I	339	5.2	970.0	8.5	45.6	266.9	0.0106	0.56	0.01	0.08	0.585	0.652	617	415.8	0.025	0.050	17	17.02
Persimmon Creek	OK720500-01-0150G	40286	19-May-08	9.27	99.6	36.4	I	308	18.9	913.0	8.4	56.8	217.2	0.0106	0.72	0.01	0.48	0.745	1.214	622	495.3	0.115	0.162	52	9.68
Persimmon Creek	OK720500-01-0150G	40564	24-Jun-08	7.47	85.7	35.7	I	267	22.1	1020.0	8.3	58.3	230.7	0.0106	0.91	0.01	0.71	0.935	1.634	646	366.0	0.146	0.219	41	9.40
Persimmon Creek	OK720500-01-0150G	41018	29-Jul-08	7.16	83.2	31.0	I	235	22.8	990.0	8.4	98.4	173.6	0.0106	1.11	0.01	0.08	1.135	1.202	605	300.0	0.135	0.214	36	2.80
Persimmon Creek	OK720500-01-0150G	41406	03-Sep-08	8.27	86.6	56.5	I	273	17.6	997.0	8.4	61.7	144.0	0.0106	0.84	0.01	0.21	0.865	1.064	610	400.0	0.118	0.210	61	9.38
Persimmon Creek	OK720500-01-0150G	40022	14-Sep-08	10.38	89.8	46.0	I	304	8.9	953.0	8.4	54.9	362.3	0.0106	0.48	0.01	0.54	0.505	1.034	699	441.3	0.109	0.132	62	20.75
Persimmon Creek	OK720500-01-0150G	41792	07-Oct-08	8.11	82.4	189.0	I	219	16.1	880.0	8.1	58.2	146.8	0.0106	0.13	0.01	0.26	0.155	0.404	547	350.0	0.198	0.357	252	62.78
Persimmon Creek	OK720500-01-0150G	42096	18-Nov-08	11.43	95.2	8.1	I	302	7.4	1179.0	8.4	66.3	194.6	0.0106	0.57	0.01	0.48	0.595	1.064	718	445.0	0.041	0.068	11	19.33
Persimmon Creek	OK720500-01-0150G	42375	29-Dec-08	12.40	91.5	12.0	I	307	2.9	972.0	8.4	43.0	240.9	0.0106	0.62	0.01	0.45	0.645	1.084	646	450.0	0.035	0.064	24	20.54
Persimmon Creek	OK720500-01-0150G	42847	10-Feb-09	10.13	86.5	50.5	I	295	8.4	1031.0	8.3	70.0	161.1	0.0106	0.49	0.01	0.72	0.515	1.224	615	390.0	0.053	0.124	74	
Persimmon Creek	OK720500-01-0150G	43013	03-Mar-09	13.12	102.9	8.5	I	266	5.0	1035.0	8.4	69.7	241.9	0.0106	0.45	0.04	0.33	0.501	0.820	644	375.0	0.027	0.065	13	16.84
Persimmon Creek	OK720500-01-0150G	43380	14-Apr-09	9.57	87.1	65.8	I	340	11.1	1124.0	8.2	76.4	247.7	0.0106	0.28	0.01	2.01	0.305	2.304	727	426.0	0.049	0.190	111	
Pond Creek	OK621000-05-0010D	37219	05-Jun-07	5.57	71.2	210.0	I	110	26.1	496.0	7.5	46.5	40.8	0.0150	0.30	0.01	0.63	0.329	0.944	364	125.2	0.378	0.445	101	
Pond Creek	OK621000-05-0010D	37823	09-Jul-07	5.38	66.1	84.7	I	242	26.0	973.0		96.7	79.6	0.0106	0.84	0.01	0.64	0.865	1.494	581	295.9	0.308	0.378	60	
Pond Creek	OK621000-05-0010D	38011	06-Aug-07	6.14	76.7	44.3	I	352	26.8	1687.0	8.0	197.7	137.7	0.0106	0.84	0.01	0.85	0.865	1.704	964	411.0	0.127	0.195	44	13.92
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	6.26	77.2	35.8	I	470	27.1	1515.0	8.0														10.55
Pond Creek	OK621000-05-0010D	38316	18-Sep-07	6.65	76.6	49.7	O	412	22.4		7.8	190.3	113.7	0.0106	3.26	0.01	0.65	3.285	3.924	890	381.4	0.136	0.203	38	
Pond Creek	OK621000-05-0010D	38461	23-Oct-07	8.17	88.2	620.0	I	78	12.0		8.0	41.8	30.1	0.0106	0.83	0.14	1.00	0.981	1.970	284	99.3	0.491	0.752	340	
Pond Creek	OK621000-05-0010D	38618	27-Nov-07	17.20	141.1	6.7		429	7.2	1426.0	8.0	151.5	97.3	0.0106	1.61	0.01	0.47	1.635	2.094	808	392.4	0.063	0.091	7	0.00
Pond Creek	OK621000-05-0010D	39117	08-Jan-08	9.44	79.8	171.0	I	194	7.9	1169.0	7.9	189.3	96.1	0.1070	1.00	0.01	1.41	1.121	2.424	703	285.1	0.183	0.323	100	
Pond Creek	OK621000-05-0010D	39452	05-Feb-08	9.97	79.8	305.0	I	271	5.9	1343.0	8.1	199.2	127.5	0.6060	1.09	0.01	2.78	1.710	3.884	802	295.9	0.369	0.595	207	21.48
Pond Creek	OK621000-05-0010D	39715	11-Mar-08	10.05	83.6	136.0	I	239	7.4	1261.0	7.9	204.3	423.0	0.0106	1.32	0.01	1.05	1.345	2.384	773	327.0	0.175	0.311	69	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Pond Creek	OK621000-05-0010D	40041	15-Apr-08	9.88	98.8	213.0	I	190	15.4	923.0	8.0	130.0	113.9	0.0630	0.88	0.01	1.25	0.957	2.144	638	236.3	0.309	0.391	90	
Pond Creek	OK621000-05-0010D	40310	20-May-08	6.93	79.6	87.0	I	333	23.1	1360.0	8.0	207.7	131.1	0.0106	1.03	0.01	1.15	1.055	2.194	864	402.1	0.265	0.297	66	
Pond Creek	OK621000-05-0010D	40549	24-Jun-08	6.44	80.1	75.1	I	291	26.6	1103.0	7.7	161.7	116.6	0.0270	0.94	0.01	0.80	0.981	1.754	692	310.0	0.325	0.367	79	
Pond Creek	OK621000-05-0010D	41006	29-Jul-08	6.60	82.1	21.9	O	407	26.4	1483.0	7.9	221.5	122.9	0.0106	0.79	0.01	0.32	0.815	1.124	876	430.0	0.096	0.157	16	
Pond Creek	OK621000-05-0010D	41395	03-Sep-08			47.1		440	21.5	1494.0		195.3	103.4	0.0560	1.22	0.01	0.04	1.290	1.274	869	472.0	0.158	0.200	36	
Pond Creek	OK621000-05-0010D	41782	07-Oct-08		51.1	48.9	I	417	18.9	1635.0		204.4	136.4	0.0106	1.30	0.01	0.58	1.325	1.894	972	460.0	0.105	0.186	83	
Pond Creek	OK621000-05-0010D	42086	18-Nov-08	10.01	86.2	9.8		417	8.9	1325.0		254.8	204.8	0.0106	0.93	0.01	0.74	0.955	1.684	1117	540.0	0.098	0.140	7	0.00
Pond Creek	OK621000-05-0010D	42373	30-Dec-08	13.42	107.1	8.0	I	358	5.7	1954.0	8.2	289.6	222.3	0.0106	0.86	0.01	0.77	0.885	1.644	1121		0.029	0.073	7	
Pond Creek	OK621000-05-0010D	42837	10-Feb-09	10.42	98.3	7.9	O	392	11.9	1346.0	7.9	347.1	236.1	0.0106	0.54	0.01	0.58	0.565	1.134	1105	480.0	0.016	0.088	7	
Pond Creek	OK621000-05-0010D	43043	09-Mar-09	3.88	36.6	22.1	O	416	13.1	2027.0	8.0	317.5	238.0	0.0160	0.72	0.01	0.50	0.750	1.234	1164	506.0	0.031	0.046	7	
Pond Creek	OK621000-05-0010D	43360	14-Apr-09	8.90	83.1	249.0	I	218	12.2	1405.0	8.0	271.5	230.8	0.0950	0.56	0.01	3.14	0.669	3.714	871	332.0	0.227	0.511	227	
Red Rock Creek: Lower	OK621200-05-0010K	39180	22-Jan-07	15.10	104.5	9.6		334	0.4		8.2	249.7	39.7	0.0106	0.46	0.01	0.55	0.485	1.024	960	455.2	0.052	0.104	10	27.94
Red Rock Lower	OK621200-05-0010K	37137	29-May-07	5.91	66.1	495.0	I	58	20.0	361.8	7.5	40.0	21.4	0.0106	0.42	0.01	1.99	0.445	2.424	308	99.0	0.373	0.697	648	
Red Rock Creek: Lower	OK621200-05-0010K	37324	26-Jun-07	5.96	74.2	152.0	I	102	26.1	370.8	7.5	32.1	24.0	0.0106	0.31	0.01	0.98	0.335	1.304	279	114.0	0.263	0.400	135	
Red Rock Creek: Lower	OK621200-05-0010K	37808	31-Jul-07	5.02	62.0	160.0	I	189	26.4	764.0	7.8	77.5	58.9	0.0106	0.42	0.01	0.35	0.445	0.784	438	223.9	0.196	0.303	141	
Red Rock Lower	OK621200-05-0010K	38251	10-Sep-07	5.72	64.1		I		22.0	118.5	7.4	11.9	11.4	0.0106	0.95	0.06	1.62	1.021	2.630	224	37.0	0.303	0.757	1008	
Red Rock Creek: Lower	OK621200-05-0010K	38412	16-Oct-07	6.80	70.9	120.0	I	231	17.5		7.9	60.4	53.7	0.0106	0.62	0.17	0.26	0.801	1.050	453	252.7	0.199	0.276	53	9.16
Red Rock Creek: Lower	OK621200-05-0010K	38571	13-Nov-07	7.53	75.3	34.2	I	406	15.3	1399.0	7.9	139.0	118.0	0.0106	0.46	0.22	0.64	0.691	1.320	821	451.8	0.220	0.239	29	27.59
Red Rock Creek: Lower	OK621200-05-0010K	38723	17-Dec-07	12.68	92.1	38.3	I	246	2.1	1475.0	8.1	186.8	140.8	0.0106	1.60	0.01	0.53	1.625	2.144	769	342.8	0.197	0.242	13	141.62
Red Rock Lower	OK621200-05-0010K	39638	03-Mar-08	11.69	96.2	841.0	I	151	8.3	806.0	8.2	106.9	87.8	0.1120	0.81	0.01	2.16	0.936	2.984	459	218.4	0.245	0.591	765	
Red Rock Lower	OK621200-05-0010K	39927	07-Apr-08	8.51	86.2	478.0	I	175	14.8	836.0	7.8	89.7	67.7	0.0660	0.62	0.01	1.39	0.700	2.024	459	214.7	0.246	0.387	362	
Red Rock Lower	OK621200-05-0010K	40241	12-May-08	6.59	69.7	254.0	I	116	18.4	571.0	7.6	68.3	45.2	0.0106	0.55	0.01	0.52	0.575	1.084	364	186.6	0.202	0.352	232	
Red Rock Lower	OK621200-05-0010K	40479	16-Jun-08	5.70	67.1	340.0	I	63	23.6	242.6	7.6	23.1	15.1	0.0250	0.27	0.01	0.47	0.309	0.754	202	79.0	0.276	0.490	381	
Red Rock Lower	OK621200-05-0010K	40925	21-Jul-08	6.10	77.2	206.0	I	186	27.7	663.0	7.8	46.7	30.0	0.0106	0.39	0.01	0.73	0.415	1.134	436	214.0	0.233	0.378	108	
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	5.56	72.3	117.0	I	374	29.0	1367.0	8.0														12.25
Red Rock Creek: Lower	OK621200-05-0010K	41217	25-Aug-08	5.89	71.7	71.1	I	420	25.5	1484.0	8.2	182.5	123.1	0.0106	0.09	0.01	0.66	0.115	0.764	889	420.0	0.101	0.195	50	6.18
Red Rock Creek: Lower	OK621200-05-0010K	41571	30-Sep-08	7.31	81.3	40.2	O	289	20.8	970.0	8.0	83.4	76.6	0.0106	0.59	0.01	0.19	0.615	0.794	571	312.0	0.167	0.236	28	11.74
Red Rock Creek: Lower	OK621200-05-0010K	42015	04-Nov-08	7.85	77.0	36.2	I	333	14.8	1354.0	7.9	166.6	127.5	0.0106	0.88	0.01	0.68	0.905	1.574	788	402.0	0.168	0.216	18	19.21
Red Rock Creek: Lower	OK621200-05-0010K	42289	15-Dec-08	11.79	88.2		O	396	3.2	1040.0	8.4	223.4	164.7	0.0106	0.01	0.01	0.83	0.039	0.858	1042	448.0	0.040	0.209	10	
Red Rock Creek: Lower	OK621200-05-0010K	42770	02-Feb-09	12.11	88.0	7.9	I	415	2.3	1817.0		327.8	240.1	0.0106	0.03	0.01	0.64	0.055	0.684	1045	490.0	0.020	0.061	7	13.52
Red Rock Creek: Lower	OK621200-05-0010K	42991	03-Mar-09	12.46	99.3	17.6	O	384	5.7	1660.0	8.5	311.6	160.7	0.0106	0.01	0.01	0.87	0.039	0.898	972	522.0	0.039	0.145	21	9.53
Red Rock Creek: Lower	OK621200-05-0010K	43293	06-Apr-09	9.07	79.5	74.1	I	222	9.3	1248.0	8.3	210.2	145.2	0.0210	0.89	0.01	1.22	0.925	2.124	744	418.0	0.124	0.194	67	
Red Rock Upper	OK621200-05-0010M	37136	29-May-07	6.68	74.8	405.0	I	86	21.1	473.4	7.4	52.3	33.6	0.0106	0.40	0.01	1.69	0.425	2.104	361	124.7	0.329	0.554	352	
Red Rock Upper	OK621200-05-0010M	37325	26-Jun-07	6.35	77.0	208.0	I	184	25.2	725.0	7.6	75.8	55.2	0.0106	0.32	0.01	1.30	0.345	1.634	473	203.8	0.259	0.454	259	
Red Rock Creek: Upper	OK621200-05-0010M	37803	30-Jul-07	7.35	78.7	57.9	I	304	28.3	1285.0	8.0	156.1	103.0	0.0106	0.54	0.01	0.54	0.565	1.094	489	363.3	0.211	0.233	56	21.68
Red Rock Upper	OK621200-05-0010M	38250	10-Sep-07	5.80	67.0		I		22.6	254.0	7.4	22.2	20.5	0.0106	1.54	0.08	1.70	1.631	3.320	242	73.9	0.504	0.892	1051	
Red Rock Creek: Upper	OK621200-05-0010M	38411	16-Oct-07	6.41	66.3	55.8	I	342	17.2		8.1	102.1	84.6	0.0106	0.74	0.26	0.31	1.011	1.310	642	356.5	0.234	0.338	35	3.60
Red Rock Creek: Upper	OK621200-05-0010M	38572	13-Nov-07	7.49	74.6	35.5	I	443	15.2	1612.0	8.0	173.2	142.6	0.0106	0.54	0.23	0.57	0.781	1.340	968	501.3	0.165	0.219	25	9.86
Red Rock Creek: Upper	OK621200-05-0010M	38724	17-Dec-07	13.14	93.9	30.7	I	268	1.6		8.1	216.8	141.6	0.0106	1.54	0.01	0.47	1.565	2.024	834	373.9	0.163	0.210	7	71.63
Red Rock Creek: Upper	OK621200-05-0010M	39179	22-Jan-08	14.95	103.5	8.9	I	355	0.4		8.2	283.1	167.8	0.0106	0.65	0.01	0.50	0.675	1.164	1091	486.1	0.046	0.101	7	12.21
Red Rock Upper	OK621200-05-0010M	39637	03-Mar-08	10.43	90.6	298.0	I	251	8.2	1456.0	8.2	209.1	136.8	0.0106	0.72	0.01	1.14	0.745	1.874	878	380.6	0.169	0.294	266	
Red Rock Upper	OK621200-05-0010M	39926	07-Apr-08	9.09	88.3	343.0	I	154	14.3	848.0	7.8	95.4	69.3	0.0560	0.64	0.01	1.17	0.710	1.824	503	207.8	0.208	0.321	272	198.59
Red Rock Creek: Upper	OK621200-05-0010M	40242	12-May-08	6.20	66.3	194.0	I	161	18.0	819.0	7.8	103.4	68.1	0.0106	0.77	0.01	0.87	0.795	1.654	529	255.5	0.197	0.333	122	
Red Rock Upper	OK621200-05-0010M	40480	16-Jun-08	5.71	67.4	299.0	I	74	24.3	320.0	7.7	32.0	23.8	0.0106	0.20	0.01	0.97	0.225	1.184	244	84.0	0.322	0.499	384	
Red Rock Creek: Upper	OK621200-05-0010M	40924	21-Jul-08	6.58	81.2	147.0	I	222	27.2	796.0	7.9	90.8	61.1	0.0106	0.66	0.01	0.77	0.685	1.444	502	232.0	0.239	0.323	115	53.03
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	5.74	74.7	63.1	I	396	29.0	1510.0	8.0														7.55
Red Rock Creek: Upper	OK621200-05-0010M	41218	25-Aug-08	6.78	81.8	73.0	I	390	25.0	1462.0	8.2	177.2	137.6	0.0106	0.01	0.01	0.86	0.039	0.888	871	370.0	0.058	0.169	57	6.65
Red Rock Creek: Upper	OK621200-05-0010M	41570	30-Sep-08	7.49	81.5	20.8	O	366	19.4	1212.0	8.1	141.1	83.4	0.0106	0.58	0.01	0.24	0.605	0.834	719	380.0	0.178	0.193	15	5.13
Red Rock Creek: Upper	OK621200-05-0010M	42014	04-Nov-08	7.52	73.5	21.2	I	380	14.3	1623.0	8.0	204.3	143.0	0.0106	0.88	0.01	0.62	0.905	1.514	943	438.0	0.158	0.180	16	13.27
Red Rock Creek: Upper	OK621200-05-0010M	42288	15-Dec-08	12.49	91.2		O	409	2.4	1093.0	8.2	267.2	172.7	0.0106	0.22	0.01	0.74	0.245	0.974	1130	302.0	0.029	0.097	7	8.94
Red Rock Creek: Upper	OK621200-05-0010M	42769	02-Feb-09	12.98	93.3	3.9	O	418	1.8			358.7	252.5	0.0106	0.45	0.08	0.51	0.541	1.040	1117	320.0	0.019	0.043	7	12.76

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Red Rock Creek: Upper	OK621200-05-0010M	42992	03-Mar-09	15.31	122.6	3.7	O	397	5.7	1846.0	8.3	292.4	194.9	0.0106	0.01	0.01	0.48	0.039	0.508	1073	584.0	0.023	0.089	7	8.72
Red Rock Creek: Upper	OK621200-05-0010M	43292	06-Apr-09	9.48	79.8	35.0	I	300	8.0	1752.0	8.4	296.6	179.4	0.0300	0.62	0.01	1.44	0.664	2.074	1039	462.0	0.108	0.291	10	
Salt Creek: Lower	OK621200-04-0010F	37162	30-May-07	7.30	84.0	38.0	I	166	22.0	389.5	7.5	16.3	11.8	0.0106	0.10	0.01	0.35	0.125	0.464	241	179.0	0.017	0.072	39	
Salt Creek: Lower	OK621200-04-0010F	37343	26-Jun-07	6.44	78.4	30.0	I	206	26.7	433.5	7.6	14.2	12.2	0.0106	0.10	0.01	0.08	0.125	0.192	28	210.1	0.031	0.063	263	
Salt Creek: Lower	OK621200-04-0010F	37984	06-Aug-07	6.12	78.9	13.6	O	205	29.0	797.0	8.0	72.6	42.6	0.0106	0.01	0.01	0.17	0.039	0.198	430	264.2	0.008	0.053	22	26.91
Salt Creek: Lower	OK621200-04-0010F	38275	11-Sep-07	8.55	102.1	22.5	I	196	24.2		8.0	24.7	19.9	0.0106	0.23	0.01	0.28	0.255	0.524	273	208.1	0.017	0.073	39	48.75
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	7.65	90.5	193.0	I	187	23.8	277.2	7.7														8.57
Salt Creek: Lower	OK621200-04-0010F	38430	16-Oct-07	7.20	77.7	14.3	O	216	18.9	388.5		152.2	55.5	0.0106	0.03	0.35	0.08	0.391	0.458	667	411.8	0.012	0.066	7	5.98
Salt Creek: Lower	OK621200-04-0010F	38560	14-Nov-07	9.90	97.0	6.1	O	238	14.5	540.0		18.6	17.8	0.0106	0.01	0.10	0.08	0.125	0.192	333	253.0	0.011	0.051	10	35.32
Salt Creek: Lower	OK621200-04-0010F	38718	18-Dec-07	14.34	104.9	5.7	O	223	2.4	533.0	8.2	24.5	19.1	0.0106	0.09	0.01	0.08	0.115	0.182	312	239.8	0.014	0.032	7	89.56
Salt Creek: Lower	OK621200-04-0010F	39195	23-Jan-08	14.65	102.3	4.7	O	252	0.7	578.0	8.1	30.9	20.9	0.0106	0.13	0.01	0.08	0.155	0.222	340	264.7	0.012	0.025	7	58.88
Salt Creek: Lower	OK621200-04-0010F	39653	04-Mar-08	11.49	92.6	222.0	I	141	6.1	201.3	7.4	15.7	14.7	0.0300	0.28	0.01	0.83	0.324	1.124	216	137.5	0.093	0.243	196	
Salt Creek: Lower	OK621200-04-0010F	39948	08-Apr-08	9.78	93.2	119.0	I	193	13.2	439.8	8.2	84.0	51.5	0.0106	0.01	0.01	0.08	0.039	0.106	518	363.4	0.008	0.024	7	
Salt Creek: Lower	OK621200-04-0010F	40274	13-May-08	8.37	90.2	109.0	I	128	19.0	452.1	7.8	17.2	14.2	0.0106	0.27	0.01	0.08	0.295	0.362	281	241.6	0.034	0.061	30	200.81
Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	7.12	93.8		O	144	29.6	419.6	7.2	15.2	12.0	0.0106	0.01	0.01	0.13	0.039	0.158	236	179.0	0.006	0.029	7	19.61
Salt Creek: Lower	OK621200-04-0010F	41236	26-Aug-08	6.18	73.4	10.3	O	161	24.1	244.0	7.7	5.4	7.4	0.0106	0.01	0.01	0.08	0.039	0.106	167	137.0	0.006	0.035	7	7.58
Salt Creek: Lower	OK621200-04-0010F	41578	29-Sep-08	6.90	78.7	8.9	I	133	22.0	360.4	7.8	12.8	10.7	0.0106	0.01	0.01	0.08	0.039	0.106	205	191.0	0.018	0.044	7	0.00
Salt Creek: Lower	OK621200-04-0010F	42021	03-Nov-08	9.14	90.3	11.5	O	217	15.0	448.9	7.9	21.6	14.1	0.0106	0.01	0.01	0.23	0.039	0.258	249	327.0	0.013	0.036	7	21.03
Salt Creek: Lower	OK621200-04-0010F	42305	16-Dec-08	11.97	86.2	4.0	O	203	1.9	2962.0	8.0	79.0	30.7	0.0106	0.01	0.01	0.25	0.039	0.278	431	363.0	0.016	0.046	7	9.95
Salt Creek: Lower	OK621200-04-0010F	42786	02-Feb-09	12.93	97.3	5.8	O	208	3.4	548.0	8.0	24.6	14.8	0.0106	0.04	0.01	0.24	0.065	0.294	311	355.0	0.009	0.038	7	8.17
Salt Creek: Lower	OK621200-04-0010F	42996	02-Mar-09	11.17	90.4		O	196	6.3	506.0	8.2	30.8	17.9	0.0106	0.01	0.01	0.38	0.039	0.408	302	259.0	0.010	0.053	7	15.75
Salt Creek: Lower	OK621200-04-0010F	43368	13-Apr-09	8.49	76.7	362.0	I	88	10.8	382.9	8.0	15.1	9.1	0.0106	0.39	0.01	1.50	0.415	1.904	260	159.0	0.109	0.331	362	
Salt Creek: Upper	OK621200-04-0010P	37154	29-May-07	7.79	95.8	29.4		89	22.8	327.8	7.8	2.0	5.0	0.0106	0.01	0.01	0.40	0.039	0.428	187	157.0	0.016	0.070	33	0.00
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	5.88	70.7	58.4	I	178	24.5	341.6	7.1														19.72
Salt Creek: Upper	OK621200-04-0010P	37335	25-Jun-07	7.99	103.0	27.6	I	114	28.8	387.6	8.1	2.5	6.3	0.0106	0.01	0.01	0.08	0.039	0.106	235	188.8	0.010	0.059	13	40.54
Salt Creek: Upper	OK621200-04-0010P	37819	30-Jul-07	6.55	85.5	36.1	I	101	30.2	175.2	8.1	2.4	5.7	0.0106	0.01	0.01	0.08	0.039	0.106	172	135.3	0.032	0.089	28	29.56
Salt Creek: Upper	OK621200-04-0010P	38267	10-Sep-07	5.71	70.3	19.9	O	121	25.9	209.3	8.9	4.1	5.7	0.0106	0.01	0.01	0.67	0.039	0.698	132	94.5	0.103	0.188	17	16.00
Salt Creek: Upper	OK621200-04-0010P	38423	15-Oct-07	7.26	81.1	18.4	I	107	18.4	496.6	7.7	4.3	7.5	0.0106	0.01	0.01	0.11	0.039	0.138	183	164.4	0.021	0.094	15	15.88
Salt Creek: Upper	OK621200-04-0010P	38569	13-Nov-07	7.57	76.2	12.7	O	241	15.8	521.0	7.8	4.8	12.1	0.0106	0.09	0.01	0.08	0.115	0.182	301	256.6	0.016	0.049	7	5.84
Salt Creek: Upper	OK621200-04-0010P	38711	17-Dec-07	12.83	100.7	5.4	I	204	2.2	512.0	7.9	3.7	12.0	0.0106	0.17	0.01	0.08	0.195	0.262	288	247.3	0.025	0.057	7	20.62
Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	14.59	108.2	8.4	I	249	2.9	797.0	7.9	5.6	16.4	0.0106	0.07	0.01	0.15	0.095	0.234	312	253.9	0.008	0.023	7	11.27
Salt Creek: Upper	OK621200-04-0010P	39662	03-Mar-08	10.94	88.7	19.6		181	6.4	395.6	7.0	2.5	12.5	0.0106	0.01	0.01	0.08	0.039	0.106	235	188.1	0.009	0.031	7	
Salt Creek: Upper	OK621200-04-0010P	39934	07-Apr-08	9.99	85.8	2.4	I	260	8.6	519.0	7.6	10.7	21.9	0.0106	0.23	0.01	0.08	0.255	0.322	286	257.5	0.006	0.042	7	16.32
Salt Creek: Upper	OK621200-04-0010P	40265	13-May-08	9.42	95.3	13.9	I	210	16.0	497.0	7.6	37.0	45.7	0.0106	0.16	0.01	0.08	0.185	0.252	303	239.3	0.004	0.004	7	31.12
Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	6.69	93.9		O	201	34.4	409.5	7.5	4.3	7.3	0.0106	0.01	0.01	0.30	0.039	0.328	243	214.0	0.007	0.046	11	3.22
Salt Creek: Upper	OK621200-04-0010P	41237	26-Aug-08	5.54	68.5	20.4	O	123	28.1	273.8	7.3	3.4	6.4	0.0106	0.01	0.01	0.08	0.039	0.106	150	149.0	0.009	0.051	11	0.00
Salt Creek: Upper	OK621200-04-0010P	41579	29-Sep-08	7.04	84.9	19.5	I	174	24.6	343.7	8.0	4.1	7.2	0.0106	0.01	0.01	0.11	0.039	0.138	202	162.0	0.017	0.074	7	4.13
Salt Creek: Upper	OK621200-04-0010P	42022	03-Nov-08	9.37	97.3	13.3	O	167	15.8	374.2	8.4	7.5	13.0	0.0106	0.01	0.01	0.52	0.039	0.548	209	385.0	0.017	0.048	7	3.86
Salt Creek: Upper	OK621200-04-0010P	42787	02-Feb-09	12.45	99.2	8.6	O	225	5.7	504.0	8.0	3.4	12.1	0.0106	0.01	0.01	0.14	0.039	0.168	296	328.0	0.009	0.037	7	5.44
Salt Creek: Upper	OK621200-04-0010P	42997	02-Mar-09	12.08	98.6		O	149	6.5	473.1	8.3	5.6	13.6	0.0106	0.01	0.01	0.30	0.039	0.328	289	240.0	0.010	0.044	7	14.74
Salt Creek: Upper	OK621200-04-0010P	43369	13-Apr-09	10.41	89.9	239.0	I	174	9.8	321.1	8.0	4.1	7.1	0.0106	0.03	0.01	0.52	0.055	0.564	215	201.0	0.040	0.101	7	
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37130	29-May-07	9.50	108.6	15.6	I	205	21.9	12410.0	8.1	3773.1	1262.1	0.0106	0.94	0.42	0.45	1.371	1.810	8356	1521.1	0.016	0.054	13	24.62
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37307	25-Jun-07	6.76	81.5	766.0	I	164	25.0	4793.0	7.9	884.8	868.1	0.0106	0.64	0.01	1.22	0.665	1.874	3287	1245.2	0.366	0.460	593	140.87
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37791	30-Jul-07	7.16	86.6	7.2	I	245	24.8	9820.0	7.8	2592.3	1169.8	0.0106	1.06	0.01	0.51	1.085	1.584	6198	1397.8	0.012	0.059	26	99.63
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	5.03	60.3	4.8	O	213	25.0	11470.0	7.5														33.63
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38328	17-Sep-07	9.55	107.9	5.9	O	232	21.3	11730.0	7.9	5393.4	1609.7	0.0106	1.24	0.01	0.51	1.265	1.764	7199	1245.2	0.008	0.041	10	24.71
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38394	15-Oct-07	6.48	66.5	1000.0	I	230	16.6	18110.0	7.6	5699.8	771.3	0.0980	1.63	0.01	2.01	1.742	3.654	10750	1257.4	0.459	0.931	1217	51.06
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38542	13-Nov-07	11.13	104.9	3.3	I	228	12.7	17350.0	8.0	6917.2	1380.9	0.0106	1.66	0.54	0.34	2.211	2.540	11000	1369.2	0.008	0.025	7	17.92
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38699	18-Dec-07	12.72	92.3	14.3	I	245	2.1	14320.0	8.0	4872.6	1005.1	0.0106	2.46	0.01	0.42	2.485	2.894	9449	1452.6	0.042	0.057	19	674.79
Salt Creek: Kingfisher Co.	OK620910-02-0100D	39167	22-Jan-08	16.12	108.9	4.4		224	0.0		8.0	7508.1	1413.0	0.0106	3.12	0.01	0.23	3.145	3.364	10978	1672.9	0.015	0.027	24	53.01
Salt Creek: Kingfisher Co.	OK620910-02-0100D	39625	03-Mar-08	10.28	85.6	733.0	I	192	7.4	10660.0	8.0	5129.4	1443.0	0.1200	2.16	0.01	1.58	2.294	3.754	6294	1180.1	0.228	0.476	434	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDisSolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Salt Creek: Kingfisher Co.	OK620910-02-0100D	39912	07-Apr-08	9.62	88.4	4.8	O	234	11.6	15.2	8.0	5138.6	1262.1	0.0106	1.41	0.01	0.36	1.435	1.784	9338	1446.9	0.006	0.017	7	18.85
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40227	12-May-08	9.12	89.6	16.7	O	236	14.5	8420.0	8.0	1886.9	889.0	0.0106	1.20	0.01	0.22	1.225	1.434	5349	1435.6	0.036	0.069	18	28.50
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40465	16-Jun-08	8.17	95.2	77.7	I	281	22.9	8220.0	7.6	2452.8	1206.2	0.0106	0.60	0.01	0.70	0.625	1.314	5212	1285.0	0.099	0.160	57	63.06
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40912	21-Jul-08	7.67	91.4	8.1	O	205	24.0	12230.0	7.4	4552.9	1093.0	0.0106	0.18	0.01	0.31	0.205	0.504	7631	1092.0	0.010	0.041	12	20.81
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41206	25-Aug-08	7.60	88.2	17.4	O	175	22.8	17960.0	7.8	6198.5	1083.3	0.0150	0.01	0.01	0.24	0.043	0.268	10995	1429.0	0.009	0.042	21	5.82
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41553	29-Sep-08	6.96	73.7	6.1	O	175	18.2	17270.0	7.7	5138.8	1012.9	0.0106	0.77	0.71	0.08	1.491	1.558	10402	1451.0	0.004	0.031	17	5.34
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41986	03-Nov-08	9.08	87.1	3.6	O	224	13.5	16950.0	7.9	5426.2	1157.6	0.0106	0.01	0.01	0.24	0.039	0.268	10534	1570.0	0.008	0.030	10	29.29
Salt Creek: Kingfisher Co.	OK620910-02-0100D	42276	15-Dec-08	14.37	96.9	1.9	O	301	0.0		7.9	6711.2	1255.1	0.0106	2.19	0.01	0.25	2.215	2.454	11832	1743.0	0.004	0.036	13	12.74
Salt Creek: Kingfisher Co.	OK620910-02-0100D	42757	02-Feb-09	14.67	104.5	4.0	O	229	1.4		7.9	6259.6	1131.4	0.0106	2.31	0.01	0.21	2.335	2.534	11851	1725.0	0.005	0.023	15	18.96
Salt Creek: Kingfisher Co.	OK620910-02-0100D	42972	02-Mar-09	12.61	90.9	2.3	O	219	1.8		8.0	8042.3	1355.5	0.0106	2.62	0.01	0.20	2.645	2.834	12498	1832.0	0.004	0.021	12	10.41
Salt Creek: Kingfisher Co.	OK620910-02-0100D	43280	06-Apr-09	11.91	91.0	5.5	O	178	4.0	21800.0	7.9	9398.4	1456.9	0.0290	2.09	0.01	0.14	2.133	2.244	13890	1810.0	0.014	0.083	18	
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	6.14	71.2	9.6	I	245	22.3	788.0	8.0														3.04
Salt Creek: Payne Co.	OK620900-02-0020D	37156	29-May-07	8.01	89.3	72.7	I	112	20.8	286.1	6.8	14.5	12.9	0.0106	0.13	0.01	0.95	0.155	1.094	203	128.6	0.028	0.075	27	44.57
Salt Creek: Payne Co.	OK620900-02-0020D	37337	25-Jun-07	6.30	76.7	25.4	I	181	25.4	520.0	7.9	38.5	22.8	0.0106	0.11	0.01	0.08	0.135	0.202	327	220.3	0.026	0.070	13	16.37
Salt Creek: Payne Co.	OK620900-02-0020D	37989	07-Aug-07	5.52	71.7	13.1	O	295	28.9		7.6	131.4	57.2	0.0106	0.01	0.01	0.38	0.039	0.408	631	385.4	0.004	0.035	7	2.65
Salt Creek: Payne Co.	OK620900-02-0020D	38269	10-Sep-07	6.54	78.5	32.0	I	138	24.3		7.5	23.9	17.8	0.0106	0.17	0.01	0.40	0.195	0.584	234	154.5	0.028	0.068	20	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	38425	15-Oct-07	7.57	82.2	13.5	I	308	18.8	1147.0		23.2	16.8	0.0106	0.11	0.07	0.23	0.191	0.410	286	232.7	0.010	0.036	13	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	38555	13-Nov-07	7.26	72.2	9.9	O	252	15.2	577.0		80.7	36.8	0.0106	0.01	0.17	0.22	0.195	0.404	461	300.8	0.023	0.052	7	1.43
Salt Creek: Payne Co.	OK620900-02-0020D	38713	17-Dec-07	13.24	93.4	27.0	I	150	1.1		6.9	44.5	22.8	0.0106	0.35	0.01	0.08	0.375	0.442	314	184.6	0.028	0.060	7	9.06
Salt Creek: Payne Co.	OK620900-02-0020D	39191	22-Jan-08	13.68	98.4	5.9	O	302	1.7	926.0	8.0	91.7	53.6	0.0106	0.01	0.01	0.08	0.039	0.106	526	378.0	0.015	0.022	7	3.18
Salt Creek: Payne Co.	OK620900-02-0020D	39649	03-Mar-08	10.50	88.2	390.0	I	67	7.7	207.0	7.4	16.6	15.7	0.0850	0.54	0.01	0.89	0.639	1.444	172	79.4	0.122	0.298	406	
Salt Creek: Payne Co.	OK620900-02-0020D	39944	07-Apr-08	8.88	88.6	5.5	O	307	15.2	737.0	8.2	24.1	16.5	0.0106	0.13	0.01	0.08	0.155	0.222	286	207.0	0.104	0.216	281	14.99
Salt Creek: Payne Co.	OK620900-02-0020D	40270	12-May-08	8.47	87.2		O	197	16.7	590.0	7.9	48.2	28.2	0.0106	0.07	0.01	0.08	0.095	0.162	360	266.7	0.010	0.036	7	16.52
Salt Creek: Payne Co.	OK620900-02-0020D	40494	17-Jun-08	7.25	81.1	257.0	I	88	20.8	233.8	7.5	17.6	10.9	0.0106	0.16	0.01	0.94	0.185	1.114	174	93.0	0.126	0.282	223	
Salt Creek: Payne Co.	OK620900-02-0020D	40952	22-Jul-08	4.84	62.1	22.0	O	172	28.2	590.0	7.8	65.7	21.0	0.0106	0.01	0.01	0.57	0.039	0.598	349	203.0	0.008	0.050	18	0.87
Salt Creek: Payne Co.	OK620900-02-0020D	41241	26-Aug-08	5.52	65.5	23.7	O	239	23.8	682.0	7.6	121.9	35.0	0.0106	0.01	0.01	0.08	0.039	0.106	499	291.0	0.011	0.050	13	0.10
Salt Creek: Payne Co.	OK620900-02-0020D	41582	30-Sep-08	4.85	52.2	18.5	I	210	18.3	762.0	7.6	79.2	32.6	0.0106	0.01	0.01	0.08	0.039	0.106	427	329.0	0.008	0.046	13	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	42026	03-Nov-08	5.60	54.6	7.7	O	233	14.2	867.0	7.5	109.1	32.9	0.0106	0.01	0.01	0.56	0.039	0.588	468	293.0	0.014	0.042	7	
Salt Creek: Payne Co.	OK620900-02-0020D	42300	15-Dec-08	9.28	70.9	7.1	O	236	3.7	475.0	7.8	23.0	18.0	0.0106	0.01	0.01	0.39	0.039	0.418	307	309.0	0.014	0.017	7	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	42781	02-Feb-09	12.85	97.5	3.8	O	280	5.2	568.0	8.0	102.6	46.7	0.0106	0.01	0.01	0.31	0.039	0.338	511	384.0	0.010	0.043	7	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	43001	02-Mar-09	11.55	93.8	5.5	O	236	6.8	807.0	8.1	90.7	41.9	0.0106	0.01	0.01	0.48	0.039	0.508	449	307.0	0.008	0.044	7	0.00
Salt Creek: Payne Co.	OK620900-02-0020D	43363	14-Apr-09	10.18	89.8	48.3	I	107	9.9	307.6	8.1	19.3	14.0	0.0106	0.06	0.01	1.18	0.085	1.254	206	167.0	0.013	0.099	12	
Salt Fork of Arkansas River	OK621010-01-0010D	37217	05-Jun-07	9.49	118.2	59.4	I	122	27.3	2520.0	8.6	457.7	208.7	0.0106	0.11	0.01	0.86	0.135	0.984	1387	351.3	0.111	0.222	36	
Salt Fork of Arkansas River	OK621010-01-0010D	37825	09-Jul-07	8.12	107.2	84.3	I	215	25.4	2178.0		329.0	325.8	0.0106	0.22	0.01	1.03	0.245	1.264	1352	547.6	0.151	0.247	69	
Salt Fork of Arkansas River	OK621010-01-0010D	38013	06-Aug-07	7.78	105.8	223.0	I	144	30.7	3549.0	8.3	631.3	386.5	0.0106	0.23	0.01	1.67	0.255	1.914	2137	585.2	0.084	0.313	188	328.28
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	5.79	74.1	113.0	I	96	28.1	3858.0	8.0														160.13
Salt Fork of Arkansas River	OK621010-01-0010D	38314	18-Sep-07	9.09	104.6	236.0	O	91	22.1		8.1	2247.9	521.2	0.0106	0.60	0.01	2.75	0.625	3.364	3844	603.6	0.064	0.412	194	66.20
Salt Fork of Arkansas River	OK621010-01-0010D	38459	23-Oct-07	13.04	134.5	144.0	I	100	17.0		8.6	223.1	503.5	0.0106	0.10	0.01	2.13	0.125	2.244	4677	654.1	0.039	0.287	123	63.40
Salt Fork of Arkansas River	OK621010-01-0010D	38616	27-Nov-07	12.00	94.2	64.5		140	5.2	8310.0	8.3	2177.3	471.5	0.0106	0.22	0.01	1.84	0.245	2.074	4834	689.5	0.019	0.166	53	66.74
Salt Fork of Arkansas River	OK621010-01-0010D	39115	08-Jan-08	14.71	128.9	187.0	I	133	9.6	7200.0	8.4	3147.2	787.9	0.0600	0.51	0.01	1.55	0.584	2.074	4147	612.0	0.056	0.229	177	
Salt Fork of Arkansas River	OK621010-01-0010D	39450	05-Feb-08	11.99	94.7	87.1	I	174	5.4	5790.0	8.6	1766.5	381.4	0.0106	0.10	0.01	1.19	0.125	1.304	3470	569.5	0.029	0.161	83	145.58
Salt Fork of Arkansas River	OK621010-01-0010D	39717	11-Mar-08	11.11	104.9	146.0	I	110	12.6	6120.0	8.6	1759.6	437.7	0.0106	0.01	0.01	1.08	0.039	1.108	3467	523.0	0.061	0.238	168	
Salt Fork of Arkansas River	OK621010-01-0010D	40039	15-Apr-08	10.68	114.1	98.8	I	136	18.2	7320.0	8.6	2174.9	406.3	0.0106	0.01	0.01	1.20	0.039	1.228	4196	544.8	0.033	0.201	126	305.59
Salt Fork of Arkansas River	OK621010-01-0010D	40308	20-May-08	7.75	90.8	74.9	I	150	22.9	5160.0	8.2	1820.6	460.1	0.2650	0.13	0.01	1.64	0.409	1.784	3033	568.9	0.060	0.167	52	163.83
Salt Fork of Arkansas River	OK621010-01-0010D	40547	24-Jun-08	11.20	143.8	153.0	I	126	28.5	5730.0	8.6	2173.3	501.0	0.3390	0.14	0.01	2.17	0.493	2.324	3371	405.0	0.088	0.298	85	311.84
Salt Fork of Arkansas River	OK621010-01-0010D	41004	29-Jul-08	7.75	96.3	90.3	I	144	26.2	1023.0	8.3	4360.9	389.7	0.0106	0.01	0.01	1.55	0.039	1.578	6108	214.0	0.030	0.255	81	
Salt Fork of Arkansas River	OK621010-01-0010D	41393	03-Sep-08			19.6	I	114	19.2	2033.0		9363.9	813.2	0.0106	0.01	0.01	1.47	0.039	1.498	11902	870.0	0.004	0.160	36	0.00
Salt Fork of Arkansas River	OK621010-01-0010D	41780	07-Oct-08	5.34	55.8	934.0	I	132	17.6	3733.0		1090.2	200.8	0.0610	0.01	0.01	2.16	0.089	2.188	2008	400.0	0.235	0.667	488	
Salt Fork of Arkansas River	OK621010-01-0010D	42084	18-Nov-08	11.94	102.5	39.5		211	9.1	2814.0		1017.9	436.2	0.0106	0.24	0.01	1.03	0.265	1.284	2297	594.0	0.036	0.145	25	420.92
Salt Fork of Arkansas River	OK621010-01-0010D	42371	30-Dec-08	15.17	125.1	53.3	O	231	7.1	4405.0	8.5	1057.4	377.4	0.0106	0.29	0.01	0.95	0.315	1.254	2559		0.021	0.105	35	
Salt Fork of Arkansas River	OK621010-01-0010D	42835	10-Feb-09	13.01	123.6	197.0	I	180	13.0	3075.0	8.3	896.5	357.1	0.0106	0.18	0.01	1.30	0.205	1.494	2281	581.0	0.044	0.283	158	228.54

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)	Flow (cfs)
Salt Fork of Arkansas River	OK621010-01-0010D	43041	09-Mar-09	10.98	102.8	40.4	I	164	12.4	4557.0	8.6	1189.1	522.5	0.0106	0.10	0.01	0.79	0.125	0.904	2604	582.0	0.019	0.157	7	
Salt Fork of Arkansas River	OK621010-01-0010D	43358	14-Apr-09	11.82	116.0	81.9	I	145	14.6	5150.0	8.6	1537.1	730.2	0.0106	0.01	0.01	1.58	0.039	1.608	2982	612.0	0.017	0.246	71	
Sand Creek	OK620920-05-0050J	37206	05-Jun-07	4.94	55.7	30.1	I	267	21.3	2745.0	7.7	85.4	1198.6	0.0570	0.08	0.01	0.97	0.151	1.064	2637	1702.4	0.056	0.089	30	0.68
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	4.17	49.0	14.3	I	240	23.4	3275.0	7.4														0.30
Sand Creek	OK620920-05-0050J	37742	10-Jul-07	2.94	35.4	13.1	I	260	24.4	3239.0	7.7	124.0	1651.4	0.0570	0.11	0.01	0.88	0.181	1.004	3223	1995.2	0.068	0.120	20	0.16
Sand Creek	OK620920-05-0050J	37998	07-Aug-07	1.25	15.1	7.0	O	215	25.0	3288.0	7.4	168.8	1902.0	0.0106	0.13	0.01	0.75	0.155	0.894	3871	2145.7	0.033	0.100	37	0.15
Sand Creek	OK620920-05-0050J	38292	18-Sep-07	1.99	22.6	26.0	I	216	21.3	3152.0	7.4	275.4	2616.2	0.0106	0.06	0.01	0.96	0.085	1.034	3767	2440.4	0.027	0.108	68	0.50
Sand Creek	OK620920-05-0050J	38446	23-Oct-07	6.42	54.5	8.4	O	240	8.1	4219.0	8.0	221.4	2159.9	0.0106	0.14	0.50	0.68	0.651	1.320	3971	2709.8	0.023	0.076	20	0.22
Sand Creek	OK620920-05-0050J	38605	27-Nov-07	13.25	98.1	3.1	O	236	2.8	4135.0	7.7	206.5	2381.2	0.0106	0.18	0.01	0.47	0.205	0.664	4054	2912.6	0.008	0.022	7	
Sand Creek	OK620920-05-0050J	39102	07-Jan-08	13.84	115.3	2.0	O	261	7.4	3937.0	8.1	162.2	2132.7	0.0106	0.08	0.01	0.46	0.105	0.554	3642	2329.2	0.008	0.022	7	0.85
Sand Creek	OK620920-05-0050J	39437	04-Feb-08	13.19	111.1	3.0	O	242	7.9	3497.0	8.0	127.9	1875.8	0.0106	0.13	0.01	0.31	0.155	0.454	3244	2186.5	0.007	0.022	7	0.98
Sand Creek	OK620920-05-0050J	39704	10-Mar-08	11.59	99.4	10.0	O	253	8.6	3304.0	8.1	115.9	2095.8	0.0106	0.09	0.01	0.35	0.115	0.454	3167	2191.3	0.012	0.027	11	1.38
Sand Creek	OK620920-05-0050J	40026	14-Apr-08	13.13	130.0	12.4	O	263	14.9	3480.0	8.1	113.5	1494.0	0.0106	0.01	0.01	0.85	0.039	0.878	3268	2160.3	0.026	0.037	13	1.74
Sand Creek	OK620920-05-0050J	40314	20-May-08	6.28	73.4	10.0	O	203	23.1	2548.0	7.7	150.3	1937.0	0.0106	0.01	0.01	1.12	0.039	1.148	3428	2679.0	0.014	0.059	19	0.11
Sand Creek	OK620920-05-0050J	40560	23-Jun-08	4.65	51.8	117.0	I	58	20.6	695.0	7.6	20.9	214.3	0.0370	0.44	0.01	1.03	0.491	1.484	471	240.0	0.227	0.373	72	12.14
Sand Creek	OK620920-05-0050J	41012	28-Jul-08	2.89	36.4	13.5	O	213	27.1	2703.0	7.5	218.9	1968.4	0.0300	0.01	0.01	0.79	0.058	0.818	3470	1960.0	0.030	0.110	16	0.01
Sand Creek	OK620920-05-0050J	41015	29-Jul-08	1.38	16.5		O		24.2		7.5														
Sand Creek	OK620920-05-0050J	41016	29-Jul-08	1.85	21.8		O		23.5		7.4														
Sand Creek	OK620920-05-0050J	41401	02-Sep-08	2.13	24.5	77.0	O	234	22.3	2626.0	7.4	207.3	2271.4	0.2370	0.01	0.01	1.19	0.265	1.218	3891	2550.0	0.085	0.187	168	
Sand Creek	OK620920-05-0050J	41788	06-Oct-08	7.11	77.8	17.3	O	222	19.8	2013.0	7.7	195.3	2090.9	0.0200	0.21	0.01	0.64	0.244	0.864	3530	2040.0	0.055	0.111	18	0.35
Sand Creek	OK620920-05-0050J	42092	17-Nov-08	12.20	106.8	3.6	O	297	9.5	1485.0	8.1	154.1	2060.2	0.0106	0.01	0.01	0.69	0.039	0.718	3638	2350.0	0.009	0.020	7	0.53
Sand Creek	OK620920-05-0050J	42313	15-Dec-08	13.44	93.0	2.3	O	293	0.4	3548.0	8.1	136.2	1961.0	0.0106	0.01	0.01	0.57	0.039	0.598	3313	2400.0	0.005	0.024	7	0.63
Sand Creek	OK620920-05-0050J	42843	09-Feb-09	11.82	109.3	7.5	O	257	11.8	1242.0	8.1	108.5	1859.6	0.0106	0.07	0.01	0.58	0.095	0.664	2946	1770.0	0.007	0.038	7	
Sand Creek	OK620920-05-0050J	43009	02-Mar-09	13.63	112.2	1.6	O	238	6.9	1197.0	8.2	132.5	2589.5	0.0106	0.05	0.01	0.51	0.075	0.574	3145	1970.0	0.008	0.023	7	0.60
Sand Creek	OK620920-05-0050J	43376	13-Apr-09	9.02	84.5	5.3	I	263	12.4	1422.0	7.9	158.8	2288.7	0.0106	0.01	0.01	0.12	0.039	0.148	3427	2340.0	0.011	0.011	7	
Sandy Creek	OK621010-02-0010D	37216	05-Jun-07	7.08	83.6	61.7	I	253	23.7	933.0	7.9	80.7	79.2	0.0106	1.00	0.01	0.39	1.025	1.404	527	295.1	0.197	0.246	78	
Sandy Creek	OK621010-02-0010D	37826	09-Jul-07	7.90	80.7	40.3	I	197	28.1	846.0		63.1	59.2	0.0106	0.81	0.01	0.60	0.835	1.424	602	340.6	0.164	0.248	70	
Sandy Creek	OK621010-02-0010D	38014	06-Aug-07	6.81	93.5	37.8	I	282	30.3	941.0	8.3	154.2	105.4	0.0106	1.00	0.01	0.33	1.025	1.344	524	301.5	0.094	0.156	46	55.32
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	6.62	79.1	47.6	I	224	24.3	922.0	8.0														32.70
Sandy Creek	OK621010-02-0010D	38313	18-Sep-07	6.60	73.5	15.6	I	237	20.7		8.1	82.1	61.2	0.0106	3.16	0.01	0.33	3.185	3.504	475	259.7	0.086	0.099	7	0.00
Sandy Creek	OK621010-02-0010D	38458	23-Oct-07	8.82	76.6	2.9	O	223	8.9		8.2	78.6	78.3	0.0106	0.88	0.21	0.15	1.101	1.240	436	261.7	0.028	0.044	7	0.00
Sandy Creek	OK621010-02-0010D	38615	27-Nov-07	11.20	81.6	2.6	O	227	2.3	795.0	8.2	71.4	79.0	0.0106	0.95	0.17	0.08	1.131	1.198	436	265.7	0.010	0.010	7	16.14
Sandy Creek	OK621010-02-0010D	39108	07-Jan-08	9.63	80.9	13.5	I	219	7.9	761.0	7.7	102.0	375.9	0.0106	1.20	0.01	0.33	1.225	1.544	468	298.1	0.032	0.070	11	0.00
Sandy Creek	OK621010-02-0010D	39443	04-Feb-08	11.10	88.3	15.8	I	234	5.6	778.0	8.3	80.0	201.8	0.0106	1.15	0.01	0.08	1.175	1.242	440	280.7	0.042	0.066	14	0.00
Sandy Creek	OK621010-02-0010D	39710	10-Mar-08	11.07	88.5	17.3	I	240	5.8	797.0	8.3	77.3	67.4	0.0106	1.26	0.01	0.08	1.285	1.352	502	278.6	0.041	0.075	14	0.00
Sandy Creek	OK621010-02-0010D	40038	15-Apr-08	10.99	109.0	39.2	I	248	15.2	932.0	8.4	96.6	101.2	0.0170	0.88	0.01	0.76	0.911	1.654	544	305.7	0.070	0.133	71	49.07
Sandy Creek	OK621010-02-0010D	40301	19-May-08	9.31	102.0	48.9	I	234	19.7	793.0	8.3	85.3	58.7	0.0106	0.90	0.01	0.20	0.925	1.114	488	314.9	0.096	0.154	80	37.30
Sandy Creek	OK621010-02-0010D	40540	23-Jun-08	7.31	87.0	86.3	I	262	24.2	793.0	8.2	75.7	68.5	0.0260	0.93	0.01	0.39	0.970	1.334	492	386.0	0.220	0.315	98	88.04
Sandy Creek	OK621010-02-0010D	40997	28-Jul-08	8.34	101.8	13.8	O	236	25.5	808.0	8.3	110.4	73.9	0.0350	0.75	0.01	0.08	0.799	0.842	486	251.0	0.094	0.112	17	13.89
Sandy Creek	OK621010-02-0010D	41386	02-Sep-08			15.7	O	197	23.5	737.0		106.8	64.9	0.0810	0.72	0.01	0.08	0.815	0.812	482	250.0	0.101	0.160	14	5.34
Sandy Creek	OK621010-02-0010D	41845	20-Oct-08	8.44	85.2	43.4	I	289	15.8	1026.0	8.2	153.8	412.7	0.0106	1.57	0.01	0.63	1.595	2.214	1019	414.0	0.175	0.249	38	
Sandy Creek	OK621010-02-0010D	42077	17-Nov-08	10.71	93.1	14.9	I	295	9.2	1112.0	8.2	111.9	179.2	0.0106	1.30	0.01	0.96	1.325	2.274	646	408.0	0.073	0.170	17	
Sandy Creek	OK621010-02-0010D	42370	30-Dec-08	12.63	103.2	7.9	I	293	6.7	1047.0	8.3	77.7	85.0	0.0106	1.13	0.01	0.45	1.155	1.594	608		0.032	0.053	11	
Sandy Creek	OK621010-02-0010D	42834	10-Feb-09	11.53	103.5	9.9	O	270	10.7	750.0	8.2	133.3	112.6	0.0106	1.21	0.01	0.46	1.235	1.684	580	465.0	0.035	0.087	12	64.27
Sandy Creek	OK621010-02-0010D	43037	09-Mar-09	9.42	84.7	4.8	O	249	10.6	961.0	8.2	104.1	92.5	0.0106	1.02	0.05	0.33	1.081	1.400	527	222.0	0.026	0.064	7	55.68
Sandy Creek	OK621010-02-0010D	43351	13-Apr-09	9.16	80.2	43.9	I	287	9.5	1091.0	8.3	129.5	117.5	0.0106	1.00	0.01	0.18	1.025	1.194	644	328.0	0.062	0.110	101	
Skeleton Lower	OK620910-03-0010F	37144	30-May-07	6.97	76.9		I		20.2	230.7	7.8	14.9	14.0	0.0106	0.38	0.01	2.20	0.405	2.594	268	79.3	0.302	0.878	1907	
Skeleton Lower	OK620910-03-0010F	37322	26-Jun-07	4.43	53.0	51.6	I	231	25.3	968.0	7.6	98.0	86.5	0.0106	1.01	0.01	1.46	1.035	2.484	578	268.6	0.287	0.538	500	
Skeleton Lower	OK620910-03-0010F	37810	31-Jul-07	7.20	91.4	45.0	I	374	28.1	1776.0	7.6	212.0	159.8	0.0106	0.80	0.01	0.65	0.825	1.464	1030	463.6	0.103	0.191	67	
Skeleton Lower	OK620910-03-0010F	38257	11-Sep-07	6.26	72.9	906.0	I		22.5	518.0	7.9	49.3	40.2	0.0450	1.61	0.07	1.54	1.725	3.220	231	139.5	0.379	0.711	635	
Skeleton Lower	OK620910-03-0010F	38407	15-Oct-07	7.19	80.0	47.7	I	360	19.9		8.3	244.7	194.7	0.0106	2.29	0.54	0.92	2.841	3.750	1161	479.8	0.196	0.280	52	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Skeleton Lower	OK620910-03-0010F	38579	14-Nov-07	13.13	130.9	14.2	I	387	15.2	1869.0	8.6	234.4	174.9	0.0106	1.71	0.01	0.92	1.735	2.644	1090	484.5	0.145	0.219	17	65.43
Skeleton Lower	OK620910-03-0010F	38729	18-Dec-07	13.41	102.5	19.9	I	310	4.0	1800.0	5.3	232.0	157.2	0.0106	2.32	0.01	0.79	2.345	3.124	978	434.4	0.226	0.277	11	110.20
Skeleton Lower	OK620910-03-0010F	39186	23-Jan-08	18.03	129.4	11.3	I	370	1.7			244.1	200.5	0.0106	3.07	0.01	0.51	3.095	3.594	1158	444.3	0.148	0.233	11	
Skeleton Lower	OK620910-03-0010F	39644	04-Mar-08	9.19	75.5	361.0	I	267	7.8	1420.0	8.3	178.8	172.1	0.0280	1.86	0.01	1.13	1.902	3.004	853	364.4	0.254	0.410	271	
Skeleton Lower	OK620910-03-0010F	39923	07-Apr-08	9.23	92.5	50.0	I	327	15.5	1633.0	8.3	233.6	197.1	0.0106	1.82	0.01	0.79	1.845	2.624	927	419.9	0.165	0.192	38	112.59
Skeleton Lower	OK620910-03-0010F	40247	13-May-08	8.83	98.7	80.0	I	257	20.6	1101.0	8.2	125.3	115.8	0.0106	1.26	0.01	0.78	1.285	2.054	662	376.0	0.176	0.253	76	
Skeleton Lower	OK620910-03-0010F	40484	17-Jun-08	5.62	67.5	1000.0	I	295	24.1	975.0	7.9	140.2	107.0	0.0106	1.31	0.01	2.58	1.335	3.904	786	346.0	1.141	2.196	6857	
Skeleton Lower	OK620910-03-0010F	40931	21-Jul-08	14.77	197.4	23.5	O	260	30.5	973.0	8.3	189.5	132.7	0.0106	0.36	0.01	2.11	0.385	2.484	771	298.0	0.010	0.206	50	
Skeleton Lower	OK620910-03-0010F	41220	25-Aug-08	17.57	200.0	63.2	O	294	29.0	1535.0	8.5	240.2	169.4	0.0106	0.78	0.01	1.84	0.805	2.634	976	375.0	0.034	0.206	83	
Skeleton Lower	OK620910-03-0010F	41566	29-Sep-08	10.63	127.7	73.6	O	340	24.7	1748.0	8.4	221.0	177.0	0.0106	2.24	0.01	1.13	2.265	3.384	1037	378.0	0.191	0.341	60	
Skeleton Lower	OK620910-03-0010F	42012	03-Nov-08	13.72	144.9	32.5	O	345	17.3	1755.0	8.6	212.7	184.6	0.0106	4.64	0.01	0.83	4.665	5.484	1058	442.0	0.396	0.464	31	
Skeleton Lower	OK620910-03-0010F	42296	16-Dec-08	14.90	105.0	6.0	O	383	1.5		8.7	230.3	178.2	0.0106	3.79	0.01	0.70	3.815	4.504	1081	660.0	0.443	0.579	7	
Skeleton Lower	OK620910-03-0010F	42776	03-Feb-09	14.39	111.4	15.5		366	4.5	1795.0	8.6	302.0	205.1	0.0106	3.74	0.10	0.74	3.851	4.580	1043	498.0	0.884	0.909	7	
Skeleton Lower	OK620910-03-0010F	42985	02-Mar-09	16.92	137.0	18.0	O	357	6.5	1872.0	8.8	311.0	237.5	0.0106	2.37	0.01	1.25	2.395	3.634	1110	468.0	0.343	0.526	23	
Skeleton Lower	OK620910-03-0010F	43299	07-Apr-09	11.64	104.4	63.7	I	331	11.3	1724.0	8.3	295.6	242.8	0.1400	2.24	0.25	1.37	2.630	3.860	1038	446.0	0.398	0.606	35	
Skeleton Upper	OK620910-03-0010S	37131	30-May-07	7.47	85.8	346.0	I	207	22.1	1043.0	7.9	127.7	97.9	0.0106	1.29	0.01	1.53	1.315	2.834	680	248.0	0.350	0.474	332	
Skeleton Upper	OK620910-03-0010S	37306	25-Jun-07	6.61	81.0	520.0	I	214	25.3	1094.0	7.8	130.0	115.0	0.0106	1.59	0.01	1.77	1.615	3.374	746	282.0	0.439	0.670	623	
Skeleton Upper	OK620910-03-0010S	37796	30-Jul-07	7.09	92.2	48.2	I	388	29.0	2004.0	8.2	276.0	205.9	0.0106	1.47	0.01	1.24	1.495	2.724	1208	468.2	0.167	0.244	57	
Skeleton Upper	OK620910-03-0010S	38748	14-Aug-07	6.34	82.8	80.4	I	574	29.4	2016.0	8.3														26.41
Skeleton Upper	OK620910-03-0010S	38337	18-Sep-07	8.13	95.8	73.5	I	370	23.5	2007.0	8.1	285.5	202.9	0.0106	4.01	0.01	0.22	4.035	4.244	1197	489.8	0.309	0.363	98	51.44
Skeleton Upper	OK620910-03-0010S	38399	15-Oct-07	9.25	101.1	53.7	I	363	19.7	2281.0	8.4	343.3	228.9	0.0106	3.49	0.59	1.01	4.091	5.090	1398	515.6	0.291	0.384	75	
Skeleton Upper	OK620910-03-0010S	38552	14-Nov-07	9.67	96.2	38.6	I	395	13.9	2050.0	8.2	279.7	194.5	0.0106	2.14	0.01	0.80	2.165	2.954	1225	476.7	0.290	0.406	64	17.01
Skeleton Upper	OK620910-03-0010S	38698	17-Dec-07	13.15	94.6	23.0	I	332	1.7		8.2	264.3	202.6	0.0360	3.84	0.01	1.02	3.890	4.874	1047	434.1	0.336	0.398	18	12.43
Skeleton Upper	OK620910-03-0010S	39172	22-Jan-08	13.02	93.8	14.6	I	398	1.8		8.4	288.0	219.5	0.0106	4.07	0.01	0.44	4.095	4.524	1306	515.9	0.168	0.271	11	33.32
Skeleton Upper	OK620910-03-0010S	39630	03-Mar-08	10.19	88.8	36.9	I	310	9.2	1648.0	8.4	197.9	181.8	0.0210	2.42	0.01	1.14	2.455	3.574	986	381.0	0.385	0.452	304	
Skeleton Upper	OK620910-03-0010S	39917	07-Apr-08	9.09	90.8	68.4	I	360	15.4	1858.0	8.2	274.6	211.7	0.0106	2.63	0.01	0.70	2.655	3.344	1098	464.4	0.245	0.315	64	53.96
Skeleton Upper	OK620910-03-0010S	40232	12-May-08	9.36	99.8	114.0	I	300	18.4	1433.0	8.1	193.7	142.3	0.0106	2.13	0.01	0.79	2.155	2.934	857	406.2	0.271	0.348	115	70.53
Skeleton Upper	OK620910-03-0010S	40470	16-Jun-08	5.93	7.2	195.0	I	372	25.8	1438.0	7.9	206.0	150.3	0.0106	2.26	0.01	1.15	2.285	3.424	1012	454.0	0.454	0.573	192	
Skeleton Upper	OK620910-03-0010S	40917	21-Jul-08	8.97	117.5	51.8	I	365	29.4	1730.0	8.4	266.8	170.7	0.0106	2.62	0.01	1.56	2.645	4.194	1026	399.0	0.308	0.430	74	25.51
Skeleton Upper	OK620910-03-0010S	41211	25-Aug-08	8.94	115.1	69.1	I	356	28.5	2189.0	8.5	357.4	248.3	0.0106	5.25	0.01	0.82	5.275	6.084	1328	486.0	0.469	0.518	58	18.00
Skeleton Upper	OK620910-03-0010S	41558	29-Sep-08	9.95	117.0	46.1	I	318	23.4	2155.0	8.7	311.8	287.7	0.0106	6.16	0.01	0.48	6.185	6.654	1293	462.0	0.329	0.440	40	17.79
Skeleton Upper	OK620910-03-0010S	41991	03-Nov-08	11.43	114.9	54.8	I	352	15.6	1892.0	8.5	259.5	202.8	0.0106	6.54	0.01	0.81	6.565	7.364	1135	460.0	1.133	1.100	43	15.59
Skeleton Upper	OK620910-03-0010S	42281	15-Dec-08	13.35	102.9	10.3		378	4.5	2025.0	8.3	302.9	213.4	0.0106	5.90	0.01	0.66	5.925	6.574	1241	534.0	0.931	1.121	7	24.69
Skeleton Upper	OK620910-03-0010S	42762	02-Feb-09	14.88	112.9	17.2	I	367	3.8	1887.0	8.2	291.0	220.4	0.0106	4.01	0.12	0.56	4.141	4.690	1130	458.0	1.036	0.955	7	15.72
Skeleton Upper	OK620910-03-0010S	42977	02-Mar-09	15.15	122.7	9.5	O	334	6.3	1881.0	8.1	380.0	262.3	0.0106	3.29	0.01	1.27	3.315	4.574	1186	420.0	0.790	0.807	7	18.40
Skeleton Upper	OK620910-03-0010S	43285	06-Apr-09	10.29	95.3	72.3	I	341	11.9	1914.0	8.1	376.5	281.5	0.2320	4.54	0.36	1.39	5.132	6.290	1226	454.0	0.857	1.126	46	
Spring Creek	OK720500-02-0100D	37198	05-Jun-07	7.83	91.4	1.8	O	265	23.1	654.0	7.7	46.8	29.3	0.0106	0.01	0.01	0.08	0.039	0.106	387	267.3	0.013	0.026	7	0.71
Spring Creek	OK720500-02-0100D	37734	10-Jul-07	6.93	80.3	1.9	I	372	22.8	622.0	7.4	37.1	27.7	0.0106	1.50	0.01	0.16	1.525	1.674	384	259.7	0.026	0.066	7	0.99
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	6.24	69.3	5.7	I	255	20.5	625.0	7.2														0.87
Spring Creek	OK720500-02-0100D	37982	07-Aug-07	6.16	74.8	4.5	O	229	25.1	598.0	8.0	43.3	26.3	0.0106	1.46	0.01	0.08	1.485	1.552	357	245.7	0.024	0.049	7	0.30
Spring Creek	OK720500-02-0100D	38305	11-Sep-07	7.63	74.6	1.1	O	227	14.4	574.0	8.0	29.9	24.7	0.0106	1.88	0.01	0.08	1.905	1.972	365	244.1	0.023	0.034	7	0.43
Spring Creek	OK720500-02-0100D	38470	23-Oct-07	11.02	91.2	0.4	I	228	7.2	567.0	8.2	22.7	22.3	0.0106	2.12	0.10	0.08	2.231	2.298	336	245.2	0.007	0.023	7	0.51
Spring Creek	OK720500-02-0100D	38621	26-Nov-07	12.22	89.1	0.5	I	242	2.3	603.0	8.3														0.57
Spring Creek	OK720500-02-0100D	39128	08-Jan-08	13.40	113.8	2.2	O	217	8.3	602.0	8.5	39.9	31.6	0.0106	1.78	0.01	0.18	1.805	1.974	343	241.9	0.016	0.019	7	1.20
Spring Creek	OK720500-02-0100D	39460	04-Feb-08	11.74	109.8	0.5	O	189	12.4	535.0	8.5	43.8	30.5	0.0106	1.64	0.01	0.08	1.665	1.732	307	211.5	0.007	0.009	7	0.93
Spring Creek	OK720500-02-0100D	39728	11-Mar-08	10.76	86.5	0.5	O	234	6.0	602.0	8.1	32.1	27.0	0.0106	1.65	0.01	0.08	1.675	1.742	345	243.7	0.006	0.018	7	1.12
Spring Creek	OK720500-02-0100D	40050	15-Apr-08	11.57	102.9	0.9	O	229	10.1	613.0	8.1	32.2	26.6	0.0106	1.41	0.01	0.08	1.435	1.502	347	236.8	0.004	0.012	7	1.00
Spring Creek	OK720500-02-0100D	40257	13-May-08	9.70	97.8	1.7	O	240	15.7	589.0	8.1	28.5	23.2	0.0106	1.10	0.01	0.08	1.125	1.192	337	261.8	0.004	0.026	7	0.67
Spring Creek	OK720500-02-0100D	40505	17-Jun-08	6.34	68.3	51.4	I	184	18.8	562.0	7.9	36.6	43.1	0.1070	1.43	0.01	1.10	1.551	2.544	336	144.0	0.036	0.139	83	0.43
Spring Creek	OK720500-02-0100D	40942	22-Jul-08	8.62	99.4	9.3	I	205	22.5	581.0	8.2	28.5	23.2	0.0200	1.70	0.01	0.08	1.734	1.792	345	200.0	0.012	0.023	13	0.00
Spring Creek	OK720500-02-0100D	41252	26-Aug-08	5.29	58.4	2.5	O	242	20.1	696.0	7.6	37.9	29.7	0.0106	0.85	0.01	0.08	0.875	0.942	403	268.0	0.010	0.031	7	1.23

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Spring Creek	OK720500-02-0100D	41593	30-Sep-08	7.83	75.2	0.6	O	238	13.5	635.0	7.8	31.6	28.9	0.0106	1.10	0.01	0.08	1.125	1.192	373	220.0	0.004	0.019	7	
Spring Creek	OK720500-02-0100D	42006	04-Nov-08	9.08	86.8	0.3	O	261	13.4	755.0	7.9	35.2	30.3	0.0106	1.01	0.01	0.21	1.035	1.234	393	340.0	0.004	0.011	7	0.69
Spring Creek	OK720500-02-0100D	42387	30-Dec-08	11.97	90.5	0.3	O	235	3.6	670.0	8.0	34.3	30.9	0.0106	1.96	0.01	0.23	1.985	2.204	379	210.0	0.005	0.014	7	1.07
Spring Creek	OK720500-02-0100D	42799	03-Feb-09	11.87	83.3	0.4	O	211	0.9		8.1	57.0	71.4	0.0106	2.05	0.01	0.13	2.075	2.194	342	238.0	0.004	0.016	7	
Spring Creek	OK720500-02-0100D	43062	10-Mar-09	7.05	58.1	0.5	O	216	7.3	588.0	7.8	27.5	25.1	0.0106	1.21	0.01	0.08	1.235	1.302	319	234.0	0.004	0.030	7	
Spring Creek	OK720500-02-0100D	43311	07-Apr-09	11.32	89.9	0.7	O	262	5.5	705.0	8.1	39.1	37.8	0.0106	0.99	0.01	0.37	1.015	1.374	396	264.0	0.004	0.028	7	
Stillwater Lower	OK620900-04-0040C	37141	29-May-07	7.55	87.5	354.0	I	111	22.1	376.7	7.9	25.8	17.0	0.0106	0.29	0.01	1.45	0.315	1.754	291	131.7	0.136	0.366	792	
Stillwater Lower	OK620900-04-0040C	37318	25-Jun-07	5.41	67.7	42.5	I	143	27.3	444.6	8.0	30.1	22.6	0.0106	0.53	0.01	0.58	0.555	1.124	262	158.1	0.034	0.141	57	
Stillwater Lower	OK620900-04-0040C	37806	30-Jul-07	5.43	70.3	45.8	I	222	29.9	768.0	7.9	63.9	52.1	0.0106	2.31	0.01	0.08	2.335	2.402	414	257.7	0.203	0.251	54	
Stillwater Lower	OK620900-04-0040C	38254	10-Sep-07	5.72	68.9	113.0	I	107	25.7	297.5	7.5	15.7	14.4	0.0106	0.41	0.01	0.52	0.435	0.944	200	110.0	0.070	0.179	121	
Stillwater Lower	OK620900-04-0040C	38415	16-Oct-07	5.89	63.4	61.4	I	139	18.7		7.7	46.2	33.6	0.0150	1.82	0.15	0.25	1.985	2.220	304	171.1	0.373	0.413	41	
Stillwater Lower	OK620900-04-0040C	38576	14-Nov-07	7.58	76.5	10.6	I	216	15.8	1075.0	7.9	118.5	82.4	0.0106	7.92	0.18	0.83	8.111	8.930	607	291.2	1.135	1.176	10	20.68
Stillwater Lower	OK620900-04-0040C	38720	17-Dec-07	12.12	90.1	32.0	I	178	3.0	746.0	7.9	75.8	63.4	0.0106	3.32	0.01	0.15	3.345	3.484	419	215.5	0.400	0.448	7	84.38
Stillwater Lower	OK620900-04-0040C	39183	23-Jan-08	16.20	113.1	8.4		207	0.9			114.0	94.4	0.0106	6.67	0.01	0.58	6.695	7.264	611	305.5	1.021	1.068	7	0.00
Stillwater Lower	OK620900-04-0040C	39641	03-Mar-08	10.10	87.0	1000.0	I	66	8.4	247.3	8.0	19.0	22.9	0.1480	0.76	0.01	1.68	0.922	2.454	219	90.1	0.271	0.747	859	
Stillwater Lower	OK620900-04-0040C	39930	08-Apr-08	8.56	79.2	1000.0	I		11.9	150.6	7.7	8.3	10.6	0.1350	0.36	0.01	0.48	0.509	0.854	148	60.0	0.363	1.061	2463	
Stillwater Lower	OK620900-04-0040C	40238	12-May-08	7.07	73.5	94.3	I	150	16.8	474.6	7.6	49.3	36.7	0.0106	1.08	0.01	0.08	1.105	1.172	305	202.7	0.129	0.193	70	
Stillwater Lower	OK620900-04-0040C	40928	21-Jul-08	7.55	98.0	37.7	I	151	30.1	484.0	7.8	36.4	28.5	0.0106	1.11	0.01	0.19	1.135	1.314	267	164.0	0.136	0.171	43	
Stillwater Lower	OK620900-04-0040C	41224	26-Aug-08	6.14	73.7	35.0	O	187	24.3	1162.0		159.4	102.6	0.0370	11.76	0.01	0.72	11.811	12.494	696	600.0	1.829	1.726	19	
Stillwater Lower	OK620900-04-0040C	40746	04-Sep-08	5.50	62.1	26.0	I	224	21.3	1133.0	7.6														3.80
Stillwater Lower	OK620900-04-0040C	41574	30-Sep-08	7.29	83.5	32.9	I	150	22.0	814.0	7.9	77.8	72.8	0.0150	7.07	0.01	0.40	7.099	7.484	484	211.0	0.978	0.960	18	
Stillwater Lower	OK620900-04-0040C	42018	04-Nov-08	7.14	73.2	32.5	O	173	16.4	1168.0	7.6	123.1	122.4	0.0106	12.45	0.01	1.03	12.475	13.494	684	302.0	1.856	2.097	19	
Stillwater Lower	OK620900-04-0040C	42292	15-Dec-08	11.36	86.8		O	222	4.1	1130.0	8.2	136.2	100.0	0.0106	11.29	0.01	0.86	11.315	12.164	651	342.0	1.742	2.382	7	
Stillwater Lower	OK620900-04-0040C	42773	02-Feb-09	13.85	109.5	10.5	O	230	5.1	1296.0		190.4	120.9	0.0106	10.03	0.21	0.94	10.251	11.180	737	350.0	1.350	1.425	7	13.55
Stillwater Lower	OK620900-04-0040C	42988	03-Mar-09	14.86	119.3	13.3	O	230	6.0	1152.0	8.3	182.8	159.0	0.0106	8.99	0.01	0.79	9.015	9.794	725	400.0	1.327	1.352	7	12.06
Stillwater Lower	OK620900-04-0040C	43296	06-Apr-09	9.87	90.1	18.9	I	204	11.4	847.0	8.3	93.3	79.6	0.0170	4.26	0.09	1.14	4.367	5.490	484	406.0	0.569	0.745	17	
Stillwater Upper	OK620900-04-0070T	37140	29-May-07	7.47	85.4	97.9	I	147	22.3	443.1	7.8	31.4	17.8	0.0106	0.20	0.01	0.80	0.225	1.014	262	152.0	0.034	0.113	274	
Stillwater Upper	OK620900-04-0070T	37319	25-Jun-07	7.11	88.4	24.0	I	128	25.9	374.7	8.0	23.1	16.8	0.0106	0.12	0.01	0.41	0.145	0.544	215	136.2	0.004	0.033	70	
Stillwater Upper	OK620900-04-0070T	37805	30-Jul-07	5.13	67.6	34.0	I	149	29.1	450.3	7.8	21.9	28.7	0.0250	0.25	0.01	0.08	0.289	0.342	226	169.9	0.030	0.095	35	21.65
Stillwater Upper	OK620900-04-0070T	38253	10-Sep-07	6.97	85.5	55.9	I	110	26.3	323.6	7.6	17.7	12.3	0.0106	0.08	0.01	0.35	0.105	0.444	199	122.5	0.014	0.069	95	
Stillwater Upper	OK620900-04-0070T	38414	16-Oct-07	6.74	72.1	49.4		152	18.6		7.8	21.3	23.9	0.0106	0.32	0.08	0.08	0.411	0.478	250	176.5	0.034	0.228	26	3.99
Stillwater Upper	OK620900-04-0070T	38575	13-Nov-07	6.14	62.5	20.1	I	213	16.3	570.0	7.6	36.2	40.8	0.0106	1.22	0.12	0.27	1.351	1.610	339	228.1	0.036	0.071	16	11.80
Stillwater Upper	OK620900-04-0070T	38721	17-Dec-07	11.65	86.3	20.0	I	223	2.9	626.0	8.0	30.0	49.9	0.0106	0.72	0.01	0.08	0.745	0.812	343	236.5	0.026	0.032	7	14.78
Stillwater Upper	OK620900-04-0070T	39182	23-Jan-08	16.05	140.2	9.4		230	0.1			53.6	47.9	0.0470	0.47	0.01	0.13	0.531	0.614	349	254.8	0.020	0.040	7	11.59
Stillwater Upper	OK620900-04-0070T	39640	03-Mar-08	11.64	95.3	88.3	I	120	6.8	334.5	8.3	24.2	17.8	0.0330	0.39	0.01	0.08	0.437	0.482	194	128.0	0.034	0.114	135	
Stillwater Upper	OK620900-04-0070T	39929	07-Apr-08	9.58	94.8	41.1	I	140	14.8	411.3	8.1	22.7	20.9	0.0270	0.27	0.01	0.24	0.311	0.524	227	159.5	0.017	0.037	30	
Stillwater Upper	OK620900-04-0070T	40239	12-May-08	7.06	73.8	56.3	I	129	17.9	358.2	8.0	22.6	20.6	0.0106	0.47	0.01	0.08	0.495	0.562	205	160.5	0.029	0.064	28	
Stillwater Upper	OK620900-04-0070T	40476	16-Jun-08	6.15	75.0	56.5	I	155	25.2	502.0	8.0	38.4	32.7	0.0106	1.46	0.01	0.08	1.485	1.552	295	195.0	0.164	0.213	60	
Stillwater Upper	OK620900-04-0070T	40477	16-Jun-08	6.68	80.4	38.3	I	131	24.9	366.2	8.2	21.3	19.1	0.0106	0.32	0.01	0.08	0.345	0.412	210	131.0	0.020	0.049	28	
Stillwater Upper	OK620900-04-0070T	40740	10-Jul-08	5.76	68.4	51.7	I	126	24.0	371.8	7.6														17.49
Stillwater Upper	OK620900-04-0070T	40927	21-Jul-08	7.03	89.8	23.6	I	139	28.3	363.7	8.0	28.0	17.0	0.0106	0.15	0.01	0.31	0.175	0.474	196	136.0	0.007	0.088	54	
Stillwater Upper	OK620900-04-0070T	41225	26-Aug-08	4.20	48.3	14.4		367	22.1	1011.0		58.9	98.2	0.0320	1.76	0.01	0.50	1.806	2.274	604	380.0	0.025	0.053	7	0.62
Stillwater Upper	OK620900-04-0070T	41270	28-Aug-08	4.06	47.9																				
Stillwater Upper	OK620900-04-0070T	41573	30-Sep-08	8.09	91.0	76.6	I	129	21.6	358.0	8.1	39.5	18.1	0.0106	0.12	0.01	0.08	0.145	0.212	213	135.0	0.007	0.078	68	
Stillwater Upper	OK620900-04-0070T	42017	04-Nov-08	3.67	36.8	15.1	O	320	15.4	815.0	7.6	56.6	52.0	0.0106	0.01	0.01	0.46	0.039	0.488	461	357.0	0.049	0.085	11	0.40
Stillwater Upper	OK620900-04-0070T	42291	15-Dec-08	9.07	68.1		O	342	3.4	990.0	7.9	77.6	87.2	0.0106	0.26	0.01	0.48	0.285	0.754	619	398.0	0.053	0.174	7	
Stillwater Upper	OK620900-04-0070T	42772	02-Feb-09	14.24	105.6	4.6	O	354	2.9	916.0		67.5	109.1	0.0106	0.21	0.03	0.31	0.251	0.550	518	408.0	0.010	0.029	7	0.81
Stillwater Upper	OK620900-04-0070T	42989	03-Mar-09	13.09	101.5	7.6	O	347	5.0	895.0	8.3	58.0	94.6	0.0106	0.60	0.01	0.39	0.625	1.004	523	364.0	0.019	0.084	7	0.51
Stillwater Upper	OK620900-04-0070T	43295	06-Apr-09	10.11	88.3	20.8	I	295	9.3	775.0	8.2	42.0	70.9	0.0310	0.12	0.01	1.04	0.165	1.174	456	366.0	0.042	0.231	7	
Turkey Creek	OK621010-01-0230G	37211	04-Jun-07	7.88	91.2	110.0	I	216	22.6	2413.0	7.9	44.9	1148.6	0.0106	0.12	0.01	0.59	0.145	0.724	2105	1406.1	0.076	0.112	49	2.64
Turkey Creek	OK621010-01-0230G	37831	10-Jul-07	7.45	91.8	116.0	I	233	26.1	3291.0		74.0	1585.6	0.0106	0.20	0.01	0.41	0.225	0.624	3052	2028.3	0.036	0.095	77	5.81

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Turkey Creek	OK621010-01-0230G	37889	17-Jul-07	7.08	84.4	131.0	I	264	24.2	2979.0	7.7														9.93
Turkey Creek	OK621010-01-0230G	38018	07-Aug-07	6.91	86.0	32.6	O	225	26.5	3605.0	7.9	87.0	1881.5	0.0106	0.14	0.01	0.41	0.165	0.564	3424	2599.6	0.021	0.061	34	11.95
Turkey Creek	OK621010-01-0230G	38308	17-Sep-07	6.45	72.2	18.7	O	230	20.8		7.8	314.5	2052.4	0.0106	0.11	0.01	0.45	0.135	0.574	2825	1991.8	0.028	0.064	20	0.14
Turkey Creek	OK621010-01-0230G	38454	22-Oct-07	9.36	85.7	9.9	O	230	11.6		8.1	76.2	1563.3	0.0106	0.36	0.20	0.36	0.571	0.920	2916	1945.7	0.018	0.052	7	
Turkey Creek	OK621010-01-0230G	38611	26-Nov-07	11.91	90.7	2.6	O	288	4.0	1340.0	7.9	87.6	1844.4	0.0106	0.17	0.18	0.08	0.361	0.428	3319	2526.7	0.013	0.014	7	0.17
Turkey Creek	OK621010-01-0230G	39111	07-Jan-08	11.90	94.1	6.4	O	260	5.3	3433.0	8.1	96.2	2152.2	0.0106	0.10	0.01	0.27	0.125	0.384	3214	2230.7	0.009	0.023	7	1.03
Turkey Creek	OK621010-01-0230G	39445	04-Feb-08	13.26	97.3	6.9	O	270	2.5	1207.0	8.1	103.8	2343.0	0.0106	0.01	0.01	0.08	0.039	0.106	3510	2496.5	0.007	0.011	7	0.73
Turkey Creek	OK621010-01-0230G	39713	10-Mar-08	11.83	99.0	9.1	O	250	7.7	3688.0	8.2	94.1	2284.9	0.0106	0.08	0.01	0.23	0.105	0.324	3627	2691.5	0.008	0.024	7	
Turkey Creek	OK621010-01-0230G	40033	14-Apr-08	14.08	137.9	15.8	O	238	14.0	3395.0	8.4	264.0	1795.4	0.0106	0.16	0.01	0.60	0.185	0.774	3258	2300.0	0.019	0.038	14	0.13
Turkey Creek	OK621010-01-0230G	40304	19-May-08	8.27	93.8	52.7	I	236	21.4	3433.0	7.9	100.4	1752.6	0.0106	0.17	0.01	0.84	0.195	1.024	3439	2484.3	0.036	0.086	43	0.74
Turkey Creek	OK621010-01-0230G	40543	23-Jun-08	7.83	92.7	31.3		202	24.7	2749.0	7.9	81.5	1335.3	0.0410	0.22	0.01	0.48	0.275	0.714	2591	1620.0	0.108	0.203	51	0.10
Turkey Creek	OK621010-01-0230G	41773	06-Oct-08	6.55	68.1	84.5	I	153	17.6	1639.0	7.8	55.8	906.6	0.2490	0.37	0.01	1.65	0.633	2.034	1704	1170.0	0.510	0.660	65	1.98
Turkey Creek	OK621010-01-0230G	42080	17-Nov-08	9.73	79.3	9.7	O	296	6.6	2001.0	8.0	97.4	1967.0	0.0106	0.01	0.01	0.68	0.039	0.708	3255	2220.0	0.014	0.035	7	0.50
Turkey Creek	OK621010-01-0230G	42365	29-Dec-08	13.91	101.0	3.8	O	276	2.1	3632.0	8.2	99.5	2287.9	0.0106	0.01	0.01	0.34	0.039	0.368	3386	2350.0	0.005	0.012	7	0.57
Turkey Creek	OK621010-01-0230G	42829	09-Feb-09	10.14	90.8	12.3	O	282	10.2	3548.0	7.9	134.3	3206.3	0.0106	0.08	0.01	0.61	0.105	0.704	3386	2244.0	0.020	0.056	22	0.61
Turkey Creek	OK621010-01-0230G	43044	10-Mar-09	8.29	69.9	17.1	O	263	7.9	3886.0	8.1	121.8	2630.5	0.0150	0.13	0.01	0.25	0.159	0.394	3759	2490.0	0.009	0.016	7	0.28
Turkey Creek	OK621010-01-0230G	43354	13-Apr-09	10.04	88.1	262.0	I	270	9.5	3486.0	8.1	91.5	2471.7	0.0106	0.01	0.01	1.22	0.039	1.248	3308	2210.0	0.071	0.388	286	
Turkey Creek: Lower	OK620910-06-0010B	37129	29-May-07	6.79	77.4	155.0	I	216	21.8	1039.0	8.1	118.1	114.8	0.0240	1.17	0.01	1.59	1.208	2.774	653	305.1	0.351	0.500	160	52.40
Turkey Creek: Lower	OK620910-06-0010B	37312	25-Jun-07	6.53	80.3	170.0	I	204	26.1	854.0	7.6	94.4	67.5	0.0106	0.73	0.01	0.97	0.755	1.714	553	241.4	0.489	0.561	231	
Turkey Creek: Lower	OK620910-06-0010B	37800	31-Jul-07	8.36	102.1	49.3	I	342	25.1	1704.0	7.8	235.6	144.3	0.0106	0.67	0.01	1.13	0.695	1.814	952	419.3	0.067	0.252	63	0.50
Turkey Creek: Lower	OK620910-06-0010B	38336	18-Sep-07	7.40	85.2	29.0	I	330	22.3	1474.0	8.1	191.1	139.4	0.0106	2.17	0.01	0.38	2.195	2.564	846	409.2	0.351	0.366	34	57.06
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	6.91	73.5	10.8	O	356	18.4	1653.0	8.2														32.98
Turkey Creek: Lower	OK620910-06-0010B	38404	16-Oct-07	7.32	74.5	12.9	I	320	16.2	1639.0	8.2	228.5	155.1	0.0240	1.54	0.49	0.50	2.054	2.530	955	399.2	0.194	0.225	19	44.43
Turkey Creek: Lower	OK620910-06-0010B	38551	14-Nov-07	9.73	93.8	4.7	I	375	13.8	1664.0	8.4	207.6	128.5	0.0106	1.05	0.01	0.47	1.075	1.534	967	435.6	0.046	0.087	7	29.15
Turkey Creek: Lower	OK620910-06-0010B	38697	17-Dec-07	13.46	96.7	12.4	I	390	1.7		8.2	195.9	182.5	0.0106	2.29	0.01	0.84	2.315	3.144	828	403.0	0.218	0.275	7	33.56
Turkey Creek: Lower	OK620910-06-0010B	39177	23-Jan-08	14.37	100.1	6.1		397	0.6		8.3	244.5	202.2	0.0106	2.00	0.01	0.31	2.025	2.324	988	441.1	0.058	0.089	7	8.07
Turkey Creek: Lower	OK620910-06-0010B	39635	04-Mar-08	10.38	85.6	1000.0	I	256	6.1	1056.0	8.2	139.0	110.4	0.1790	1.45	0.01	2.59	1.643	4.054	591	259.8	0.568	1.126	819	
Turkey Creek: Lower	OK620910-06-0010B	39921	08-Apr-08	7.07	68.1	4.0	I	322	13.9	1391.0	8.2	236.3	187.5	0.0106	1.40	0.01	0.87	1.425	2.284	819	382.9	0.192	0.250	44	40.86
Turkey Creek: Lower	OK620910-06-0010B	40237	13-May-08	8.71	95.7	80.3	I	332	20.0	1311.0		172.5	135.6	0.0106	1.59	0.01	0.96	1.615	2.564	771	397.3	0.339	0.385	105	42.74
Turkey Creek: Lower	OK620910-06-0010B	40474	17-Jun-08	5.34	61.4	1000.0	I	218	22.2	713.0	7.5	140.6	140.2	0.1710	0.79	0.01	2.49	0.975	3.294	527	284.0	0.811	1.337	1654	
Turkey Creek: Lower	OK620910-06-0010B	40922	22-Jul-08	6.02	75.0	49.0	O	410	26.8	1647.0	8.3	269.5	122.6	0.0106	1.52	0.01	0.85	1.545	2.384	964	420.0	0.311	0.392	46	58.07
Turkey Creek: Lower	OK620910-06-0010B	41216	26-Aug-08	6.39	74.2	62.8	I	301	23.1	1664.0	8.3	290.9	126.0	0.0106	0.45	0.01	1.21	0.475	1.674	934	344.0	0.097	0.259	111	10.29
Turkey Creek: Lower	OK620910-06-0010B	41563	30-Sep-08	6.46	69.9	21.5	I	384	19.0	1834.0	8.6	295.4	162.1	0.0106	0.92	0.01	0.54	0.945	1.474	1077	472.0	0.181	0.320	39	12.78
Turkey Creek: Lower	OK620910-06-0010B	41996	04-Nov-08	10.67	105.7	10.1	O	413	15.6	1772.0	8.4	345.6	234.9	0.0106	2.04	0.01	0.48	2.065	2.534	992	478.0	0.174	0.211	7	7.31
Turkey Creek: Lower	OK620910-06-0010B	42286	16-Dec-08	14.53	100.3	3.3	O	390	0.2		8.0	250.8	174.4	0.0106	1.76	0.01	0.38	1.785	2.154	984	589.0	0.041	0.077	7	25.45
Turkey Creek: Lower	OK620910-06-0010B	42767	03-Feb-09	13.27	100.7	5.4	O	408	3.7	1695.0	8.2	307.7	185.6	0.0106	1.72	0.08	0.40	1.811	2.200	968	479.0	0.065	0.083	7	13.89
Turkey Creek: Lower	OK620910-06-0010B	42982	03-Mar-09	11.42	90.1	2.3	O	373	5.3	1418.0	8.2	343.4	396.7	0.0106	0.78	0.01	0.45	0.805	1.244	937	390.0	0.018	0.072	7	12.63
Turkey Creek: Lower	OK620910-06-0010B	43290	07-Apr-09	10.43	86.5	11.0	O	390	7.3	1493.0	7.9	256.0	214.3	0.1170	1.56	0.01	0.83	1.691	2.404	916	425.0	0.197	0.427	7	
Turkey Creek: Upper	OK620910-06-0010T	37132	30-May-07	6.94	76.9	132.0	I	275	20.3	1327.0	7.3	188.3	89.7	0.0106	0.79	0.01	1.68	0.815	2.484	783	300.6	0.501	0.590	150	7.91
Turkey Creek: Upper	OK620910-06-0010T	37311	25-Jun-07	5.67	68.6	155.0	I	156	24.8	625.0	7.7	75.2	51.2	0.0210	0.53	0.01	1.46	0.565	2.004	465	169.1	0.615	0.726	115	68.22
Turkey Creek: Upper	OK620910-06-0010T	37795	30-Jul-07	10.94	142.6	12.0	I	343	29.0	1801.0	8.4	322.9	167.4	0.0106	0.20	0.01	0.82	0.225	1.034	1153	406.5	0.061	0.181	17	11.76
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	4.76	57.3	10.9	I	283	24.7	1980.0	8.0														5.74
Turkey Creek: Upper	OK620910-06-0010T	38332	17-Sep-07	7.82	96.1	19.4	I	230	25.8	1332.0	7.8	212.1	106.6	0.0106	1.02	0.01	1.00	1.045	2.034	747	285.7	0.510	0.601	20	14.44
Turkey Creek: Upper	OK620910-06-0010T	38398	15-Oct-07	8.65	90.8	37.0	I	313	17.7	1992.0	8.3	311.4	140.0	0.0106	1.02	0.73	0.80	1.761	2.550	1124	389.1	0.265	0.337	46	15.85
Turkey Creek: Upper	OK620910-06-0010T	38546	13-Nov-07	18.96	188.3	4.8	I	350	16.5	1888.0	8.7	316.1	130.8	0.0106	0.35	0.01	0.58	0.375	0.944	1077	402.3	0.036	0.090	7	10.30
Turkey Creek: Upper	OK620910-06-0010T	38703	18-Dec-07	13.71	103.2	11.8	I	321	3.4	1588.0	8.3	207.0	153.8	0.0106	1.94	0.01	0.62	1.965	2.574	890	407.9	0.251	0.310	7	14.02
Turkey Creek: Upper	OK620910-06-0010T	39171	22-Jan-08	16.87	117.4	5.0	O	415	0.5		8.3	311.5	137.4	0.0106	1.89	0.01	0.64	1.915	2.544	1088	448.9	0.029	0.056	10	8.53
Turkey Creek: Upper	OK620910-06-0010T	39629	03-Mar-08	9.86	81.4	1000.0	I	240	7.1	918.0	8.1	118.2	66.6	0.8670	1.39	0.01	5.53	2.271	6.934	652	230.8	1.002	1.705	609	
Turkey Creek: Upper	OK620910-06-0010T	39916	07-Apr-08	8.62	83.7	29.3	I	309	13.9	1489.0	8.2	253.1	117.4	0.0106	0.98	0.01	1.33	1.005	2.324	832	355.3	0.241	0.304	30	23.09
Turkey Creek: Upper	OK620910-06-0010T	40231	12-May-08	8.44	92.1	61.2	I	230	19.5	1410.0	8.2	203.9	100.1	0.0106	1.14	0.01	1.24	1.165	2.394	797	371.9	0.401	0.437	58	13.81
Turkey Creek: Upper	OK620910-06-0010T	40469	16-Jun-08	5.15	61.8	78.9	I	205	24.3	978.0	7.5	148.0	69.7	0.0260	0.47	0.01	1.82	0.510	2.304	556	226.0	0.676	0.863	142	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Turkey Creek: Upper	OK620910-06-0010T	40916	21-Jul-08	9.58	123.2	10.8	O	374	28.5	2107.0	8.3	398.1	151.9	0.0106	1.54	0.01	0.81	1.565	2.364	1188	450.0	0.399	0.429	12	17.26
Turkey Creek: Upper	OK620910-06-0010T	41210	25-Aug-08	5.82	70.3	14.5	O	372	24.9	2202.0	8.6	445.7	162.4	0.0106	0.89	0.01	0.83	0.915	1.734	1319	465.0	0.258	0.327	29	6.64
Turkey Creek: Upper	OK620910-06-0010T	41557	29-Sep-08	9.97	112.6	13.1	I	420	21.6	2452.0	8.4	403.8	176.6	0.0106	1.25	0.01	0.35	1.275	1.614	1397	512.0	0.264	0.297	21	11.29
Turkey Creek: Upper	OK620910-06-0010T	41990	03-Nov-08	11.67	117.5	6.4	O	432	15.7	2111.0	8.4	313.7	140.6	0.0106	1.64	0.01	0.54	1.665	2.194	1208	497.0	0.150	0.177	7	21.02
Turkey Creek: Upper	OK620910-06-0010T	42280	15-Dec-08			2.4						267.7	148.9	0.0106	1.37	0.01	0.41	1.395	1.794	1054		0.015	0.098	7	26.25
Turkey Creek: Upper	OK620910-06-0010T	42761	02-Feb-09	19.20	147.6	2.6	O	412	4.3	1905.0	8.3	279.6	181.8	0.0106	1.58	0.09	0.48	1.681	2.150	1069	456.0	0.042	0.087	7	15.00
Turkey Creek: Upper	OK620910-06-0010T	42976	02-Mar-09	18.11	146.2	4.4	O	401	4.0	1738.0	8.2	254.8	293.3	0.0220	1.22	0.01	0.54	1.256	1.774	1103	442.0	0.104	0.166	7	13.70
Turkey Creek: Upper	OK620910-06-0010T	43284	06-Apr-09	11.48	96.0	31.0	I	427	7.7	1592.0	8.0	282.3	175.7	0.1860	1.69	0.20	1.18	2.076	3.070	972	440.0	0.203	0.511	25	
Uncle John's Creek	OK620910-05-0030C	37125	29-May-07	7.20	80.1	154.0	I	175	20.2	728.0	7.8	37.5	117.4	0.0106	0.86	0.08	1.11	0.951	2.050	500	264.3	0.354	0.484	184	54.13
Uncle John's Creek	OK620910-05-0030C	37316	25-Jun-07	6.70	84.5	386.0	I	123	27.4	439.4	7.9	26.3	73.8	0.0106	0.76	0.07	1.08	0.841	1.910	479	167.4	0.519	0.690	268	
Uncle John's Creek	OK620910-05-0030C	37798	31-Jul-07	6.92	82.6	284.0	I	170	24.3	593.0	7.7	34.0	98.2	0.0106	1.35	0.01	0.48	1.375	1.844	495	230.3	0.443	0.575	387	48.91
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	6.72	81.2	19.5	I	277	24.8	1154.0	7.9														14.34
Uncle John's Creek	OK620910-05-0030C	38338	18-Sep-07	8.55	102.5	35.9	I	298	24.4	1169.0	8.1	64.5	209.7	0.0106	2.63	0.06	0.08	2.701	2.768	741	425.9	0.112	0.171	31	23.38
Uncle John's Creek	OK620910-05-0030C	38400	16-Oct-07	7.53	76.7	294.0	I	175	16.0	603.0	8.1	64.1	140.1	0.0106	1.12	0.17	0.63	1.301	1.920	504	282.7	0.312	0.468	292	78.33
Uncle John's Creek	OK620910-05-0030C	38547	14-Nov-07	8.72	83.2	17.7	O	296	13.3	1004.0	8.0	75.7	169.8	0.0106	1.98	0.17	0.28	2.161	2.430	730	415.5	0.106	0.151	7	20.40
Uncle John's Creek	OK620910-05-0030C	38693	17-Dec-07	12.20	86.3	27.1	I	294	0.9		8.1	56.9	186.2	0.0106	1.45	0.01	0.62	1.475	2.084	699	388.6	0.089	0.158	22	31.93
Uncle John's Creek	OK620910-05-0030C	39173	23-Jan-08	13.52	92.8	8.2	I	360	0.1		8.1	104.7	248.4	0.0106	2.64	0.01	0.21	2.665	2.864	891	489.1	0.044	0.073	7	12.05
Uncle John's Creek	OK620910-05-0030C	39631	04-Mar-08	11.62	91.5	210.0	I	227	5.2	970.0	8.1	85.4	193.9	0.1910	1.37	0.01	1.30	1.575	2.684	606	312.3	0.191	0.341	210	
Uncle John's Creek	OK620910-05-0030C	39918	08-Apr-08	8.40	77.1	1000.0	I	172	11.4	491.3	7.5	39.8	90.9	0.1210	1.15	0.01	2.30	1.285	3.464	348	161.6	0.631	1.046	1336	
Uncle John's Creek	OK620910-05-0030C	40233	13-May-08	9.06	94.0	157.0	I	167	17.4	641.0		28.7	96.5	0.0106	1.00	0.01	0.08	1.025	1.092	435	255.1	0.239	0.298	101	
Uncle John's Creek	OK620910-05-0030C	40471	17-Jun-08	6.56	70.9	120.0	I	225	21.0	758.0	7.6	65.8	143.2	0.0106	1.61	0.01	0.08	1.635	1.702	542	321.0	0.231	0.272	78	
Uncle John's Creek	OK620910-05-0030C	40918	22-Jul-08	7.23	86.3	14.8	I	309	24.1	902.0	8.2	91.8	228.1	0.0230	1.75	0.01	0.32	1.787	2.084	786	457.0	0.149	0.185	17	6.97
Uncle John's Creek	OK620910-05-0030C	41212	26-Aug-08	8.01	90.4	52.5	I	180	21.3	651.0	8.1	38.6	114.3	0.0106	1.04	0.01	0.30	1.065	1.354	452	263.0	0.196	0.261	34	21.05
Uncle John's Creek	OK620910-05-0030C	41559	30-Sep-08	8.89	89.7	5.7	I	330	15.8	1159.0	8.3	68.5	222.4	0.0106	1.96	0.01	0.08	1.985	2.052	755	416.0	0.066	0.099	7	2.91
Uncle John's Creek	OK620910-05-0030C	41992	04-Nov-08	7.96	76.2	4.3	O	330	13.3	1223.0	8.0	66.8	199.2	0.0106	1.88	0.01	0.45	1.905	2.344	737	445.0	0.077	0.089	7	3.15
Uncle John's Creek	OK620910-05-0030C	42282	16-Dec-08	12.85	88.6	8.3	O	375	0.3		8.0	76.5	214.7	0.0106	2.30	0.01	0.43	2.325	2.744	809	695.0	0.040	0.041	7	
Uncle John's Creek	OK620910-05-0030C	42763	03-Feb-09	13.57	95.3	10.2	O	347	1.0		8.2	73.7	217.6	0.0106	1.57	0.05	0.53	1.631	2.150	777	495.0	0.052	0.080	14	12.13
Uncle John's Creek	OK620910-05-0030C	42978	03-Mar-09	11.60	89.5	5.6	O	343	4.4	1182.0	8.1	86.4	282.9	0.0106	1.95	0.01	0.32	1.975	2.284	792	510.0	0.043	0.053	7	11.21
Uncle John's Creek	OK620910-05-0030C	43286	07-Apr-09	12.13	92.9	13.9	I	295	4.1	1004.0	8.1	64.3	238.6	0.0220	1.42	0.01	0.80	1.456	2.234	654	437.0	0.060	0.302	7	
West Clay Creek	OK621010-01-0090R	37215	05-Jun-07	6.76	75.6	40.9	I	264	20.8	4950.0	7.5	1054.3	680.4	0.1220	0.95	0.01	1.53	1.086	2.494	3174	949.3	0.339	0.349	32	1.23
West Clay Creek	OK621010-01-0090R	37827	09-Jul-07	11.46	148.0	46.2		301	28.5	5600.0		1014.2	689.6	0.0106	0.94	0.01	0.87	0.965	1.824	3880	1253.0	0.155	0.208	23	3.42
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	7.39	92.7	46.1	I	264	27.1	3826.0	7.0														13.17
West Clay Creek	OK621010-01-0090R	38019	07-Aug-07	12.61	165.5	7.8	O	380	29.5	6550.0	7.8	3602.7	1291.6	0.0610	0.95	0.19	1.02	1.201	2.160	8837	1605.7	0.061	0.136	10	0.62
West Clay Creek	OK621010-01-0090R	38307	17-Sep-07	8.36	94.3	11.5	O	378	21.1		7.6	10548.5	1579.5	0.0320	0.69	0.01	0.50	0.736	1.204	13833	1720.6	0.072	0.114	7	0.30
West Clay Creek	OK621010-01-0090R	38455	22-Oct-07	8.76	84.7	29.1	O	348	14.2		7.9	4675.9	1437.8	0.1160	1.36	0.01	0.64	1.490	2.014	9192	1362.6	0.157	0.191	30	0.57
West Clay Creek	OK621010-01-0090R	38609	26-Nov-07	11.67	93.2	13.9		423	5.8	14770.0	7.9	7609.4	1437.0	0.0390	2.07	0.01	0.57	2.123	2.654	11018	1619.9	0.054	0.116	33	0.25
West Clay Creek	OK621010-01-0090R	39114	08-Jan-08	12.73	107.1	5.8	I	362	8.1	969.0	8.0	3550.5	1314.5	0.0106	1.59	0.01	0.61	1.615	2.214	6038	1339.3	0.041	0.089	12	
West Clay Creek	OK621010-01-0090R	39448	05-Feb-08	10.95	87.4	9.2	O	320	6.0	628.0	8.1	3192.9	1175.6	0.0106	1.42	0.01	0.54	1.445	1.974	5680	1203.8	0.025	0.068	19	0.60
West Clay Creek	OK621010-01-0090R	39718	11-Mar-08	14.27	133.2	7.7	O	288	12.2	8.0	8.1	1498.3	1446.6	0.0106	0.76	0.01	0.53	0.785	1.304	5175	1503.9	0.018	0.056	7	
West Clay Creek	OK621010-01-0090R	40032	14-Apr-08	14.35	136.8	3.1	O	8	13.2	5150.0	8.2	819.1	1214.3	0.0280	0.59	0.01	1.62	0.632	2.224	3682	1485.8	0.222	0.274	7	0.32
West Clay Creek	OK621010-01-0090R	40307	20-May-08	4.04	45.1	6.2	O	309	20.8	13320.0	7.7	4250.1	1150.2	0.1250	0.01	0.01	1.57	0.153	1.598	8872	1714.4	0.122	0.236	17	0.55
West Clay Creek	OK621010-01-0090R	40546	24-Jun-08	13.13	161.0	4.9		367	25.7	1862.0	8.1	5595.3	1195.9	0.0106	0.29	0.01	0.65	0.315	0.954	11838	1565.0	0.120	0.220	16	0.22
West Clay Creek	OK621010-01-0090R	41003	29-Jul-08	6.19	73.8	5.0		348	24.3	1824.0	7.7	10299.8	1634.4	0.0106	0.01	0.01	0.41	0.039	0.438	15833	1865.0	0.065	0.153	23	
West Clay Creek	OK621010-01-0090R	41392	02-Sep-08			5.6		352	29.3	2573.0		9918.6	1636.5	0.0106	0.01	0.01	0.50	0.039	0.528	15807	1875.0	0.041	0.138	26	0.10
West Clay Creek	OK621010-01-0090R	41776	07-Oct-08	3.84	39.0	6.6	I	400	16.1	4243.0		682.0	961.2	0.0230	1.08	0.01	0.84	1.117	1.934	2978	1248.0	0.098	0.127	7	8.92
West Clay Creek	OK621010-01-0090R	42083	18-Nov-08	11.32	95.8	191.0	O	473	8.1	5100.0		1472.7	1186.5	0.0106	0.01	0.01	0.08	0.039	0.106	4914	1618.0	0.027	0.031	7	1.47
West Clay Creek	OK621010-01-0090R	42367	29-Dec-08	17.48	149.3	4.5	O	412	7.2	5940.0	8.3	1209.5	1219.2	0.0106	0.01	0.01	0.63	0.039	0.658	3976		0.020	0.051	7	1.29
West Clay Creek	OK621010-01-0090R	42828	09-Feb-09	10.42	94.4	3.1	O	386	11.4	5680.0	7.9	1218.7	1215.6	0.0106	1.43	0.01	0.94	1.455	2.384	3834	1440.0	0.027	0.082	7	1.50
West Clay Creek	OK621010-01-0090R	43040	09-Mar-09	6.67	60.3	4.2	O	394	10.9	6060.0	8.0	1176.5	1229.8	0.0370	1.01	0.01	1.11	1.061	2.134	4077	1466.0	0.028	0.235	50	1.00
West Clay Creek	OK621010-01-0090R	43357	14-Apr-09	11.27	104.2	25.8	I	363	11.8	4303.0	8.1	384.7	2518.8	0.0170	0.15	0.01	1.33	0.181	1.494	3615	984.0	0.055	0.163	7	
Wolf Creek: Lower	OK720500-02-0030M	37205	04-Jun-07	9.57	112.4	26.5	I	175	23.4	661.0	8.1	69.7	41.4	0.0970	0.11	0.01	0.76	0.221	0.884	424	205.2	0.146	0.177	7	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Wolf Creek: Lower	OK720500-02-0030M	37741	09-Jul-07	7.33	94.5	36.4	I	235	28.8	954.0	8.3	114.2	68.4	0.0180	0.10	0.01	0.72	0.132	0.834	561	296.1	0.070	0.133	21	109.96
Wolf Creek: Lower	OK720500-02-0030M	37997	06-Aug-07	10.10	136.0	40.9	O	212	31.0	817.0	8.3	136.5	94.0	0.0106	0.01	0.01	0.74	0.039	0.768	643	308.0	0.029	0.107	26	17.38
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	5.41	64.6	50.2	I	180	24.3	1047.0	7.6														15.11
Wolf Creek: Lower	OK720500-02-0030M	38291	17-Sep-07	8.67	103.4	26.2	I	280	24.0	1515.0	8.1	185.5	245.6	0.0106	0.01	0.01	0.71	0.039	0.738	1016	498.7	0.014	0.084	23	2.71
Wolf Creek: Lower	OK720500-02-0030M	38445	22-Oct-07	9.27	89.3	11.5	O	271	13.9	1632.0	8.2	177.7	280.2	0.0106	0.12	0.38	0.50	0.511	1.000	1065	576.8	0.005	0.064	10	6.26
Wolf Creek: Lower	OK720500-02-0030M	38604	26-Nov-07	11.68	97.3	46.0	O	194	7.5	1090.0	8.5	155.2	100.0	0.0340	0.38	0.01	0.60	0.428	0.994	680	289.2	0.034	0.100	11	19.47
Wolf Creek: Lower	OK720500-02-0030M	39101	07-Jan-08	10.61	88.3	13.2	O	239	7.6	1318.0	7.9	165.7	174.4	0.0540	0.31	0.01	0.55	0.378	0.874	806	410.3	0.025	0.065	15	9.56
Wolf Creek: Lower	OK720500-02-0030M	39436	04-Feb-08	14.53	115.2	26.7	O	239	5.5	1105.0	8.5	156.2	102.0	0.0106	0.40	0.01	0.65	0.425	1.064	632	306.6	0.010	0.059	18	26.99
Wolf Creek: Lower	OK720500-02-0030M	39703	10-Mar-08	11.75	99.4	11.5	O	215	8.1	1151.0	8.3	140.3	123.1	0.0106	0.26	0.01	0.23	0.285	0.504	674	319.7	0.012	0.045	7	16.69
Wolf Creek: Lower	OK720500-02-0030M	40025	14-Apr-08	11.54	109.9	80.0	I	215	13.1	1104.0	8.4	156.7	110.0	0.0220	0.09	0.01	0.90	0.126	1.004	678	294.2	0.079	0.112	31	41.01
Wolf Creek: Lower	OK720500-02-0030M	40316	20-May-08	7.41	93.3	39.2	I	182	23.4	1160.0	8.3	179.1	113.4	0.0106	0.14	0.01	0.78	0.165	0.934	684	334.2	0.024	0.070	25	44.18
Wolf Creek: Lower	OK720500-02-0030M	40562	23-Jun-08	8.31	107.0	67.7	I	170	28.5	1081.0	8.4	163.4	116.8	0.0106	0.14	0.01	0.92	0.165	1.074	646	280.0	0.028	0.125	40	39.57
Wolf Creek: Lower	OK720500-02-0030M	41013	28-Jul-08	7.03	90.8	20.6	I	244	28.7	1722.0	7.9	234.1	321.6	0.0106	0.01	0.01	0.64	0.039	0.668	1094	605.0	0.014	0.096	23	0.64
Wolf Creek: Lower	OK720500-02-0030M	41403	02-Sep-08	7.22	87.6	18.7	O	231	25.0	1769.0	7.9	228.1	337.4	0.0106	0.01	0.01	0.85	0.039	0.878	1148	550.0	0.016	0.080	22	0.92
Wolf Creek: Lower	OK720500-02-0030M	41789	06-Oct-08	8.72	95.6	15.0	I	239	19.8	1527.0	8.0	168.7	242.7	0.0106	0.01	0.01	0.30	0.039	0.328	925	464.0	0.012	0.066	14	1.39
Wolf Creek: Lower	OK720500-02-0030M	42093	17-Nov-08	11.16	99.6	59.4	I	192	10.3	1271.0	8.5	162.0	135.0	0.0106	0.01	0.01	0.89	0.039	0.918	697	290.0	0.020	0.077	16	22.51
Wolf Creek: Lower	OK720500-02-0030M	42378	29-Dec-08			16.5						172.7	144.4	0.0106	0.01	0.01	0.87	0.039	0.898	703		0.010	0.048	7	11.36
Wolf Creek: Lower	OK720500-02-0030M	42844	09-Feb-09	11.76	104.6	30.2	I	205	10.1	1085.0	8.5	197.1	149.5	0.0106	0.10	0.01	0.77	0.125	0.884	690	308.0	0.015	0.084	28	
Wolf Creek: Lower	OK720500-02-0030M	43010	02-Mar-09	11.88	99.6	45.7	I	203	7.8	1107.0	8.4	187.8	177.8	0.0106	0.01	0.01	0.73	0.039	0.758	701	286.0	0.017	0.073	22	43.47
Wolf Creek: Lower	OK720500-02-0030M	43377	13-Apr-09	10.51	96.1	19.2	I	204	11.4	1181.0	8.5	182.5	142.5	0.0106	0.01	0.01	0.84	0.039	0.868	661	280.0	0.011	0.070	20	
Wolf Creek: Upper	OK720500-03-0010G	37204	04-Jun-07	3.26	39.4	10.3	I	220	25.4	744.0	7.7	68.5	48.6	0.0106	0.12	0.01	1.13	0.145	1.264	428	230.9	0.200	0.288	7	
Wolf Creek: Upper	OK720500-03-0010G	37740	09-Jul-07	8.92	115.1	19.4	I	245	28.8	1117.0	8.3	141.6	97.3	0.0106	0.66	0.01	0.64	0.685	1.314	709	341.1	0.034	0.096	40	135.74
Wolf Creek: Upper	OK720500-03-0010G	37996	06-Aug-07	6.75	90.1	22.5	O	224	30.1	541.0	8.3	128.3	111.2	0.0106	0.77	0.01	0.73	0.795	1.514	617	314.8	0.026	0.112	77	58.92
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	8.37	103.4	15.5	I	246	26.1	888.0	8.1														202.10
Wolf Creek: Upper	OK720500-03-0010G	38290	17-Sep-07	8.30	98.9	10.7	I	203	24.2	952.0	8.3	119.0	108.4	0.0106	0.99	0.01	0.34	1.015	1.344	635	312.2	0.015	0.047	35	34.41
Wolf Creek: Upper	OK720500-03-0010G	38444	22-Oct-07	10.84	103.0	4.1	I	210	13.0	866.0	8.5	117.1	117.3	0.0106	0.95	0.28	0.14	1.241	1.370	609	316.1	0.009	0.028	7	14.89
Wolf Creek: Upper	OK720500-03-0010G	38603	26-Nov-07	12.53	100.6	9.5	I	225	5.8	998.0	8.4	118.5	114.5	0.0106	1.31	0.19	0.08	1.511	1.578	613	332.0	0.012	0.014	15	38.35
Wolf Creek: Upper	OK720500-03-0010G	39100	07-Jan-08	10.48	90.3	16.5	I	260	8.8	970.0	8.3	121.6	98.5	0.0106	1.29	0.01	0.36	1.315	1.664	622	332.1	0.013	0.053	30	11.25
Wolf Creek: Upper	OK720500-03-0010G	39435	04-Feb-08	13.22	109.9	9.5	I	229	7.3	1038.0	8.3	130.4	103.1	0.0106	1.21	0.01	0.24	1.235	1.464	615	326.0	0.010	0.038	15	41.83
Wolf Creek: Upper	OK720500-03-0010G	39702	10-Mar-08	11.06	92.9	12.2	I	244	7.8	1075.0	8.4	118.0	96.4	0.0106	1.12	0.01	0.08	1.145	1.212	632	328.3	0.010	0.032	15	49.27
Wolf Creek: Upper	OK720500-03-0010G	40024	14-Apr-08	10.58	100.2	14.1	I	234	12.9	890.0	8.4	132.4	96.9	0.0106	0.68	0.01	0.48	0.705	1.174	623	323.3	0.007	0.042	24	52.38
Wolf Creek: Upper	OK720500-03-0010G	40315	20-May-08	9.04	111.8	42.2	I	199	26.0	1072.0	8.3	153.5	102.2	0.0106	0.35	0.01	0.66	0.375	1.024	610	337.7	0.021	0.076	85	60.37
Wolf Creek: Upper	OK720500-03-0010G	40561	23-Jun-08	8.22	105.6	30.4	I	227	28.3	980.0	8.3	107.5	119.1	0.0106	0.58	0.01	0.51	0.605	1.104	608	302.0	0.039	0.086	45	36.60
Wolf Creek: Upper	OK720500-03-0010G	41014	28-Jul-08	8.00	105.6	9.8	I	190	29.8	1129.0	8.3	176.2	130.7	0.0106	0.46	0.01	0.21	0.485	0.684	660	375.0	0.011	0.038	15	14.65
Wolf Creek: Upper	OK720500-03-0010G	41404	03-Sep-08	7.85	81.3	7.4	I	196	17.1	1162.0	8.1	168.5	132.0	0.0106	0.53	0.01	0.08	0.555	0.622	669	335.0	0.014	0.037	7	15.22
Wolf Creek: Upper	OK720500-03-0010G	41790	07-Oct-08	8.06	78.5	3.9	I	180	14.1	1082.0	8.0	132.7	131.0	0.0106	0.35	0.01	0.08	0.375	0.442	597	274.0	0.004	0.023	7	19.58
Wolf Creek: Upper	OK720500-03-0010G	42094	18-Nov-08	11.20	88.0	3.5	I	231	5.2	1183.0	8.3	118.1	109.2	0.0106	0.85	0.01	0.29	0.875	1.154	620	332.0	0.004	0.021	7	27.45
Wolf Creek: Upper	OK720500-03-0010G	42377	29-Dec-08	13.73	102.9	4.2	O	244	3.3	915.0	8.3	118.9	100.8	0.0106	1.04	0.01	0.84	1.065	1.894	597	355.0	0.008	0.020	7	33.58
Wolf Creek: Upper	OK720500-03-0010G	42845	10-Feb-09	10.11	83.9	6.0	I	228	7.3	1065.0	8.1	161.5	127.4	0.0106	0.72	0.01	0.38	0.745	1.114	598	316.0	0.006	0.039	7	
Wolf Creek: Upper	OK720500-03-0010G	43011	03-Mar-09	10.12	82.1	6.4	I	229	6.4	1079.0	8.2	144.1	119.5	0.0106	0.53	0.01	0.27	0.555	0.814	623	316.0	0.006	0.039	15	37.45
Wolf Creek: Upper	OK720500-03-0010G	43378	14-Apr-09	8.77	77.8	15.6	I	249	10.0	1187.0	8.1	156.4	117.7	0.0106	0.46	0.01	0.79	0.485	1.264	623	320.0	0.004	0.056	23	
Yellowstone Creek	OK621010-01-0270C	37212	04-Jun-07	7.16	94.8	13.6	O	187	30.1	2841.0	7.7	48.3	1379.1	0.0106	0.09	0.01	0.23	0.115	0.334	2598	1898.2	0.012	0.013	14	7.28
Yellowstone Creek	OK621010-01-0270C	37830	10-Jul-07	7.36	98.1	38.2	I	149	30.0	2402.0		49.0	1187.2	0.0106	0.01	0.01	0.27	0.039	0.298	2312	1564.0	0.017	0.033	28	12.97
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	7.38	89.2	22.7	I	207	25.1	2552.0	7.6														15.44
Yellowstone Creek	OK621010-01-0270C	38017	07-Aug-07	7.22	89.2	8.6	O	147	26.5	2975.0	7.4	47.8	1483.6	0.0106	0.01	0.01	0.08	0.039	0.106	2815	2139.5	0.006	0.017	7	2.76
Yellowstone Creek	OK621010-01-0270C	38309	17-Sep-07	7.40	93.1	6.6	O	136	27.1		7.7	53.5	2285.8	0.0106	0.01	0.01	0.08	0.039	0.106	2929	1979.2	0.007	0.017	7	0.46
Yellowstone Creek	OK621010-01-0270C	38452	22-Oct-07	10.23	92.7	13.6	I	143	11.0		7.9	78.5	1725.0	0.0106	0.08	0.20	0.08	0.291	0.358	2794	1927.3	0.006	0.023	12	1.05
Yellowstone Creek	OK621010-01-0270C	38612	26-Nov-07	12.14	101.5	4.1	O	165	7.8	2774.0	8.0														3.50
Yellowstone Creek	OK621010-01-0270C	39112	07-Jan-08	11.95	105.7	7.0	I	167	10.0	2706.0	8.1	68.8	1609.5	0.0106	0.01	0.01	0.08	0.039	0.106	2478	1946.9	0.008	0.023	7	2.59
Yellowstone Creek	OK621010-01-0270C	39446	04-Feb-08	11.34	102.2	2.1	I	169	10.7	1055.0	8.2	72.6	1628.8	0.0106	0.01	0.01	0.08	0.039	0.106	2534	1712.8	0.004	0.004	7	2.06
Yellowstone Creek	OK621010-01-0270C	39714	10-Mar-08	10.04	98.7	1.9	O	141	14.6	7.2	8.1	70.4	2050.4	0.0106	0.01	0.01	0.08	0.039	0.106	2588	2032.5	0.006	0.013	7	

Appendix A.1 Raw chemical and physical water quality data. "Turb Cause": I=inorganic, O=organic.

SiteName	WBID	SAMPLEID	Date	DO (mg/L)	DOPercSat	Turb (NTU)	Turb Cause	Alkalinity (CaCO3)	Temp (°C)	Cond (uS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDissolids (mg/L)	TotHardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSussolids (mg/L)	Flow (cfs)
Yellowstone Creek	OK621010-01-0270C	40034	14-Apr-08	11.51	121.5	4.2	O	121	17.9	2762.0	8.1	77.5	1621.1	0.0106	0.01	0.01	0.30	0.039	0.328	2668	2448.4	0.004	0.013	7	
Yellowstone Creek	OK621010-01-0270C	40305	19-May-08	7.10	100.1	10.6	O	123	30.4	2893.0	7.8	68.9	1567.0	0.0106	0.01	0.01	0.21	0.039	0.238	2872	2381.6	0.008	0.012	13	1.26
Yellowstone Creek	OK621010-01-0270C	40544	23-Jun-08	7.13	99.5	12.6	O	121	33.1	2699.0	7.9	51.3	1765.8	0.0106	0.01	0.01	0.08	0.039	0.106	2685	1825.0	0.004	0.026	14	1.47
Yellowstone Creek	OK621010-01-0270C	41847	20-Oct-08	7.61	80.6	3.6	O	164	18.0	2792.0	8.1	65.6	1544.7	0.0106	1.86	0.01	0.08	1.885	1.952	2725	1920.0	0.004	0.016	7	2.18
Yellowstone Creek	OK621010-01-0270C	42081	17-Nov-08	9.03	87.0	2.6	O	169	12.7	2849.0	7.9	61.4	1718.9	0.0106	0.01	0.01	0.08	0.039	0.106	2755	1934.0	0.005	0.013	7	0.99
Yellowstone Creek	OK621010-01-0270C	42364	29-Dec-08	13.03	100.9	1.8	O	175	4.6	2762.0	8.2	83.0	1786.2	0.0106	0.01	0.01	0.08	0.039	0.106	2613	1774.0	0.007	0.012	7	1.20
Yellowstone Creek	OK621010-01-0270C	42830	09-Feb-09	10.67	98.7	6.6	O	170	13.1	2813.0	8.2	83.1	1870.8	0.0106	0.01	0.01	0.34	0.039	0.368	2588	1780.0	0.007	0.027	7	1.26
Yellowstone Creek	OK621010-01-0270C	43045	10-Mar-09	12.06	109.7	4.5	O	154	11.1	2963.0	8.1	80.6	1921.7	0.0106	0.01	0.01	0.52	0.039	0.548	2689	1860.0	0.004	0.031	7	0.96
Yellowstone Creek	OK621010-01-0270C	43355	13-Apr-09	10.43	101.3	8.5	O	177	13.8	2857.0	8.2	86.9	1995.9	0.0106	0.01	0.01	0.63	0.039	0.658	2645	1800.0	0.010	0.056	7	

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Beaver Creek: Logan Co.	OK620900-03-0230C	37145	30-May-07		6200		4300
Beaver Creek: Logan Co.	OK620900-03-0230C	37321	26-Jun-07		650		1700
Beaver Creek: Logan Co.	OK620900-03-0230C	37961	25-Jul-07		70		230
Beaver Creek: Logan Co.	OK620900-03-0230C	37809	31-Jul-07		120		550
Beaver Creek: Logan Co.	OK620900-03-0230C	38256	11-Sep-07		550		950
Beaver Creek: Logan Co.	OK620900-03-0230C	39932	08-Apr-08	>	10000		6400
Beaver Creek: Logan Co.	OK620900-03-0230C	40246	13-May-08		400		120
Beaver Creek: Logan Co.	OK620900-03-0230C	40483	17-Jun-08		500		600
Beaver Creek: Logan Co.	OK620900-03-0230C	40930	22-Jul-08	>	1000		30
Beaver Creek: Logan Co.	OK620900-03-0230C	41221	25-Aug-08		40		60
Beaver Creek: Logan Co.	OK620900-03-0230C	41567	29-Sep-08		10	<	10
Beaver Creek: Osage Co.	OK621210-00-0050L	37153	29-May-07		720		310
Beaver Creek: Osage Co.	OK621210-00-0050L	37334	25-Jun-07		1520		920
Beaver Creek: Osage Co.	OK621210-00-0050L	37818	30-Jul-07		220		150
Beaver Creek: Osage Co.	OK621210-00-0050L	38266	10-Sep-07		280		540
Beaver Creek: Osage Co.	OK621210-00-0050L	39935	07-Apr-08		10		10
Beaver Creek: Osage Co.	OK621210-00-0050L	40266	13-May-08		340		20
Beaver Creek: Osage Co.	OK621210-00-0050L	40949	22-Jul-08		90		370
Beaver Creek: Osage Co.	OK621210-00-0050L	41238	26-Aug-08		100		460
Beaver Creek: Osage Co.	OK621210-00-0050L	41580	29-Sep-08		40		80
Bent Creek	OK720500-01-0070D	37201	04-Jun-07		740		720
Bent Creek	OK720500-01-0070D	37267	18-Jun-07		890		420
Bent Creek	OK720500-01-0070D	37735	09-Jul-07		330		770
Bent Creek	OK720500-01-0070D	37993	06-Aug-07		130		690
Bent Creek	OK720500-01-0070D	38287	17-Sep-07		370		480
Bent Creek	OK720500-01-0070D	40021	14-Apr-08		350		230
Bent Creek	OK720500-01-0070D	40285	19-May-08		440		100
Bent Creek	OK720500-01-0070D	40563	24-Jun-08		420		140
Bent Creek	OK720500-01-0070D	40898	16-Jul-08		840	>	1000
Bent Creek	OK720500-01-0070D	41019	29-Jul-08		425		360
Bent Creek	OK720500-01-0070D	41407	03-Sep-08		290		510
Bent Creek	OK720500-01-0070D	41793	07-Oct-08		1360	>	2000
Bitter Creek	OK621100-00-0100G	37151	29-May-07		360		240
Bitter Creek	OK621100-00-0100G	37331	25-Jun-07		100		40
Bitter Creek	OK621100-00-0100G	37697	03-Jul-07		180		420
Bitter Creek	OK621100-00-0100G	37816	30-Jul-07		110		90
Bitter Creek	OK621100-00-0100G	38264	10-Sep-07		40		60
Bitter Creek	OK621100-00-0100G	39937	07-Apr-08		90		10
Bitter Creek	OK621100-00-0100G	40264	12-May-08		260		140
Bitter Creek	OK621100-00-0100G	41232	25-Aug-08		10		30
Black Bear Creek: Lower	OK621200-03-0010D	37159	30-May-07		1050		1550
Black Bear Creek: Lower	OK621200-03-0010D	37340	26-Jun-07		360		260
Black Bear Creek: Lower	OK621200-03-0010D	37692	03-Jul-07		260		1100
Black Bear Creek: Lower	OK621200-03-0010D	37986	06-Aug-07	<	10		10
Black Bear Creek: Lower	OK621200-03-0010D	38272	11-Sep-07		4000		2100
Black Bear Creek: Lower	OK621200-03-0010D	39946	08-Apr-08	>	2000	>	2000
Black Bear Creek: Lower	OK621200-03-0010D	40272	13-May-08		100		60
Black Bear Creek: Lower	OK621200-03-0010D	40496	17-Jun-08		5600		8300
Black Bear Creek: Lower	OK621200-03-0010D	40954	22-Jul-08		70		160
Black Bear Creek: Lower	OK621200-03-0010D	41243	26-Aug-08		10	<	10

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Black Bear Creek: Lower	OK621200-03-0010D	41575	29-Sep-08		20		20
Black Bear Creek: Middle	OK621200-03-0010M	37138	29-May-07		1450		1500
Black Bear Creek: Middle	OK621200-03-0010M	37327	26-Jun-07		2700		4300
Black Bear Creek: Middle	OK621200-03-0010M	37966	25-Jul-07		160		710
Black Bear Creek: Middle	OK621200-03-0010M	37804	30-Jul-07		80		330
Black Bear Creek: Middle	OK621200-03-0010M	38252	10-Sep-07		3900	>	10000
Black Bear Creek: Middle	OK621200-03-0010M	39928	07-Apr-08		420		240
Black Bear Creek: Middle	OK621200-03-0010M	40478	16-Jun-08		2100		4100
Black Bear Creek: Middle	OK621200-03-0010M	40926	21-Jul-08		180		40
Black Bear Creek: Middle	OK621200-03-0010M	41226	26-Aug-08		20		30
Black Bear Creek: Middle	OK621200-03-0010M	41572	30-Sep-08		50		130
Black Bear Creek: Upper	OK621200-03-0010W	37139	29-May-07		1550		2400
Black Bear Creek: Upper	OK621200-03-0010W	37326	26-Jun-07		1700	>	5000
Black Bear Creek: Upper	OK621200-03-0010W	37969	25-Jul-07		490		200
Black Bear Creek: Upper	OK621200-03-0010W	37802	30-Jul-07		150		270
Black Bear Creek: Upper	OK621200-03-0010W	38249	10-Sep-07	>	5000	>	5000
Black Bear Creek: Upper	OK621200-03-0010W	39925	07-Apr-08		540		220
Black Bear Creek: Upper	OK621200-03-0010W	40243	12-May-08		320		540
Black Bear Creek: Upper	OK621200-03-0010W	40481	16-Jun-08		600		500
Black Bear Creek: Upper	OK621200-03-0010W	40923	21-Jul-08		250		150
Black Bear Creek: Upper	OK621200-03-0010W	41227	26-Aug-08		10		20
Black Bear Creek: Upper	OK621200-03-0010W	41569	30-Sep-08		170		180
Bois d'Arc Creek	OK621000-03-0010C	37147	29-May-07		440		960
Bois d'Arc Creek	OK621000-03-0010C	37328	25-Jun-07		140		300
Bois d'Arc Creek	OK621000-03-0010C	37693	03-Jul-07		120		400
Bois d'Arc Creek	OK621000-03-0010C	37812	30-Jul-07		200		260
Bois d'Arc Creek	OK621000-03-0010C	38260	10-Sep-07		60		600
Bois d'Arc Creek	OK621000-03-0010C	39941	07-Apr-08		130		20
Bois d'Arc Creek	OK621000-03-0010C	40260	12-May-08		540		40
Bois d'Arc Creek	OK621000-03-0010C	41228	25-Aug-08		10		10
Buffalo Creek: Lower	OK620920-05-0010G	37208	05-Jun-07		10		110
Buffalo Creek: Lower	OK620920-05-0010G	37274	18-Jun-07		230		110
Buffalo Creek: Lower	OK620920-05-0010G	37744	10-Jul-07		30		170
Buffalo Creek: Lower	OK620920-05-0010G	38000	07-Aug-07		350		300
Buffalo Creek: Lower	OK620920-05-0010G	38294	18-Sep-07		180		440
Buffalo Creek: Lower	OK620920-05-0010G	40028	15-Apr-08		60		80
Buffalo Creek: Lower	OK620920-05-0010G	40312	20-May-08		80		110
Buffalo Creek: Lower	OK620920-05-0010G	40558	23-Jun-08	>	2000	>	2000
Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08		460	>	1000
Buffalo Creek: Lower	OK620920-05-0010G	41010	28-Jul-08		25		115
Buffalo Creek: Lower	OK620920-05-0010G	41399	02-Sep-08		10		10
Buffalo Creek: Lower	OK620920-05-0010G	41786	06-Oct-08		260		960
Buffalo Creek: Upper	OK620920-05-0010P	37207	05-Jun-07		220		130
Buffalo Creek: Upper	OK620920-05-0010P	37273	18-Jun-07		260		160
Buffalo Creek: Upper	OK620920-05-0010P	37743	10-Jul-07		250		300
Buffalo Creek: Upper	OK620920-05-0010P	37999	07-Aug-07		480		780
Buffalo Creek: Upper	OK620920-05-0010P	38293	18-Sep-07		220		350
Buffalo Creek: Upper	OK620920-05-0010P	40027	14-Apr-08	<	10		40
Buffalo Creek: Upper	OK620920-05-0010P	40313	20-May-08		90		660
Buffalo Creek: Upper	OK620920-05-0010P	40559	23-Jun-08	>	2000	>	2000

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*
Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	630	>	1000
Buffalo Creek: Upper	OK620920-05-0010P	41011	28-Jul-08	90		130
Buffalo Creek: Upper	OK620920-05-0010P	41400	02-Sep-08	270		60
Buffalo Creek: Upper	OK620920-05-0010P	41787	06-Oct-08	100	>	2000
Chickaskia River: Lower	OK621100-00-0010B	37148	29-May-07	850		2850
Chickaskia River: Lower	OK621100-00-0010B	37329	25-Jun-07	220		440
Chickaskia River: Lower	OK621100-00-0010B	37694	03-Jul-07	420		460
Chickaskia River: Lower	OK621100-00-0010B	37813	30-Jul-07	10		20
Chickaskia River: Lower	OK621100-00-0010B	38261	10-Sep-07	10		20
Chickaskia River: Lower	OK621100-00-0010B	39940	07-Apr-08	50	<	10
Chickaskia River: Lower	OK621100-00-0010B	40261	12-May-08	300		80
Chickaskia River: Lower	OK621100-00-0010B	41229	25-Aug-08	20		30
Chickaskia River: Upper	OK621100-00-0010M	37150	29-May-07	1200	>	2000
Chickaskia River: Upper	OK621100-00-0010M	37332	25-Jun-07	100		300
Chickaskia River: Upper	OK621100-00-0010M	37698	03-Jul-07	540		460
Chickaskia River: Upper	OK621100-00-0010M	37815	30-Jul-07	30		40
Chickaskia River: Upper	OK621100-00-0010M	38263	10-Sep-07	< 20		40
Chickaskia River: Upper	OK621100-00-0010M	39938	07-Apr-08	20		20
Chickaskia River: Upper	OK621100-00-0010M	40263	12-May-08	540		40
Chickaskia River: Upper	OK621100-00-0010M	41231	25-Aug-08	20		10
Chilocco Creek	OK621210-00-0270C	37152	29-May-07	340		590
Chilocco Creek	OK621210-00-0270C	37333	25-Jun-07	220		120
Chilocco Creek	OK621210-00-0270C	37700	03-Jul-07	100		70
Chilocco Creek	OK621210-00-0270C	37817	30-Jul-07	150		560
Chilocco Creek	OK621210-00-0270C	38265	10-Sep-07	440		320
Chilocco Creek	OK621210-00-0270C	39936	07-Apr-08	100	<	10
Chilocco Creek	OK621210-00-0270C	40267	13-May-08	340		80
Chilocco Creek	OK621210-00-0270C	41233	25-Aug-08	150		20
Cimarron River: Beaver Co.	OK620930-00-0010T	37191	04-Jun-07	920		60
Cimarron River: Beaver Co.	OK620930-00-0010T	37296	25-Jun-07	470		130
Cimarron River: Beaver Co.	OK620930-00-0010T	37727	09-Jul-07	340		30
Cimarron River: Beaver Co.	OK620930-00-0010T	37975	06-Aug-07	330		100
Cimarron River: Beaver Co.	OK620930-00-0010T	38300	10-Sep-07	600		160
Cimarron River: Beaver Co.	OK620930-00-0010T	40046	14-Apr-08	50	<	10
Cimarron River: Beaver Co.	OK620930-00-0010T	40253	12-May-08	40		40
Cimarron River: Beaver Co.	OK620930-00-0010T	40501	16-Jun-08	260		860
Cimarron River: Beaver Co.	OK620930-00-0010T	40884	15-Jul-08	70		60
Cimarron River: Beaver Co.	OK620930-00-0010T	40938	21-Jul-08	20		10
Cimarron River: Beaver Co.	OK620930-00-0010T	41248	25-Aug-08	230		10
Cimarron River: Beaver Co.	OK620930-00-0010T	41589	29-Sep-08	50		30
Cimarron River: Cimarron Co.	OK720900-00-0180C	37188	04-Jun-07	370		190
Cimarron River: Cimarron Co.	OK720900-00-0180C	37299	25-Jun-07	90	<	10
Cimarron River: Cimarron Co.	OK720900-00-0180C	37724	09-Jul-07	20		50
Cimarron River: Cimarron Co.	OK720900-00-0180C	37972	06-Aug-07	200		580
Cimarron River: Cimarron Co.	OK720900-00-0180C	38296	10-Sep-07	< 10		90
Cimarron River: Cimarron Co.	OK720900-00-0180C	40042	14-Apr-08	< 10		10
Cimarron River: Cimarron Co.	OK720900-00-0180C	40249	12-May-08	40		30
Cimarron River: Cimarron Co.	OK720900-00-0180C	40879	15-Jul-08	40		40
Cimarron River: Cimarron Co.	OK720900-00-0180C	40934	21-Jul-08	150		50
Cimarron River: Cimarron Co.	OK720900-00-0180C	41244	25-Aug-08	170		270

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Cimarron River: Cimarron Co.	OK720900-00-0180C	41585	29-Sep-08		340		60
Clear Creek: Harper Co.	OK720500-02-0070G	37195	05-Jun-07		80		30
Clear Creek: Harper Co.	OK720500-02-0070G	37304	26-Jun-07		50		150
Clear Creek: Harper Co.	OK720500-02-0070G	37731	10-Jul-07		110		100
Clear Creek: Harper Co.	OK720500-02-0070G	37979	07-Aug-07		100		180
Clear Creek: Harper Co.	OK720500-02-0070G	38304	11-Sep-07		30		50
Clear Creek: Harper Co.	OK720500-02-0070G	40049	15-Apr-08		60		70
Clear Creek: Harper Co.	OK720500-02-0070G	40256	13-May-08		60		10
Clear Creek: Harper Co.	OK720500-02-0070G	40504	17-Jun-08		1700		2500
Clear Creek: Harper Co.	OK720500-02-0070G	40888	15-Jul-08		50		40
Clear Creek: Harper Co.	OK720500-02-0070G	40941	22-Jul-08		25		125
Clear Creek: Harper Co.	OK720500-02-0070G	41251	26-Aug-08		40		110
Clear Creek: Harper Co.	OK720500-02-0070G	41592	30-Sep-08		40		130
Clear Creek: Beaver Co.	OK720500-02-0300F	37190	04-Jun-07		240		280
Clear Creek: Beaver Co.	OK720500-02-0300F	37298	25-Jun-07		380		840
Clear Creek: Beaver Co.	OK720500-02-0300F	37726	09-Jul-07		60		40
Clear Creek: Beaver Co.	OK720500-02-0300F	37974	06-Aug-07		40	<	10
Clear Creek: Beaver Co.	OK720500-02-0300F	38298	10-Sep-07	<	10		10
Clear Creek: Beaver Co.	OK720500-02-0300F	40044	14-Apr-08		10		30
Clear Creek: Beaver Co.	OK720500-02-0300F	40251	12-May-08		60	<	10
Clear Creek: Beaver Co.	OK720500-02-0300F	40499	16-Jun-08		180		120
Clear Creek: Beaver Co.	OK720500-02-0300F	40883	15-Jul-08		60		10
Clear Creek: Beaver Co.	OK720500-02-0300F	40936	21-Jul-08		20		10
Clear Creek: Beaver Co.	OK720500-02-0300F	41246	25-Aug-08		40		40
Clear Creek: Beaver Co.	OK720500-02-0300F	41587	29-Sep-08		50		10
Cooper Creek	OK620910-02-0040C	37128	29-May-07		900		500
Cooper Creek	OK620910-02-0040C	37313	25-Jun-07		450		1400
Cooper Creek	OK620910-02-0040C	37757	23-Jul-07		60		50
Cooper Creek	OK620910-02-0040C	37801	31-Jul-07	>	10000	>	10000
Cooper Creek	OK620910-02-0040C	38335	18-Sep-07		150		160
Cooper Creek	OK620910-02-0040C	39922	08-Apr-08		1100		1300
Cooper Creek	OK620910-02-0040C	40236	13-May-08		100		160
Cooper Creek	OK620910-02-0040C	40475	07-Jun-08		2600		5600
Cooper Creek	OK620910-02-0040C	40921	22-Jul-08		70		150
Cooper Creek	OK620910-02-0040C	41215	26-Aug-08		90		90
Cooper Creek	OK620910-02-0040C	41466	16-Sep-08		280		1300
Cooper Creek	OK620910-02-0040C	41562	30-Sep-08		50		110
Cottonwood Creek	OK620910-04-0010D	37146	30-May-07	>	5000	>	5000
Cottonwood Creek	OK620910-04-0010D	37960	24-Jul-07	<	10	>	1000
Cottonwood Creek	OK620910-04-0010D	37971	25-Jul-07		400		210
Cottonwood Creek	OK620910-04-0010D	38021	08-Aug-07		20		320
Cottonwood Creek	OK620910-04-0010D	38259	11-Sep-07		360		600
Cottonwood Creek	OK620910-04-0010D	39933	08-Apr-08		240		600
Cottonwood Creek	OK620910-04-0010D	40244	12-May-08		580		560
Cottonwood Creek	OK620910-04-0010D	40486	17-Jun-08		5700	>	10000
Cottonwood Creek	OK620910-04-0010D	40933	22-Jul-08		50		30
Cottonwood Creek	OK620910-04-0010D	41222	25-Aug-08		150		450
Cottonwood Creek	OK620910-04-0010D	41568	29-Sep-08		70		190
Council Creek	OK620900-02-0050H	37157	19-May-07		2750		2700
Council Creek	OK620900-02-0050H	37338	25-Jun-07		180		360

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Council Creek	OK620900-02-0050H	37689	03-Jul-07		860		1080
Council Creek	OK620900-02-0050H	37988	07-Aug-07		160		470
Council Creek	OK620900-02-0050H	38270	10-Sep-07		600		500
Council Creek	OK620900-02-0050H	39943	07-Apr-08		300		10
Council Creek	OK620900-02-0050H	40269	12-May-08		100		40
Council Creek	OK620900-02-0050H	40493	17-Jun-08		6800	>	10000
Council Creek	OK620900-02-0050H	40951	22-Jul-08		50		170
Council Creek	OK620900-02-0050H	41240	26-Aug-08		130		150
Council Creek	OK620900-02-0050H	41583	30-Sep-08		40		480
Crooked Creek: Beaver Co.	OK620930-00-0100G	37192	04-Jun-07		80		10
Crooked Creek: Beaver Co.	OK620930-00-0100G	37295	25-Jun-07		60		60
Crooked Creek: Beaver Co.	OK620930-00-0100G	37728	09-Jul-07		80		80
Crooked Creek: Beaver Co.	OK620930-00-0100G	37976	06-Aug-07		250		160
Crooked Creek: Beaver Co.	OK620930-00-0100G	38301	10-Sep-07		1010		250
Crooked Creek: Beaver Co.	OK620930-00-0100G	40047	14-Apr-08		10		10
Crooked Creek: Beaver Co.	OK620930-00-0100G	40254	12-May-08		20		30
Crooked Creek: Beaver Co.	OK620930-00-0100G	40502	16-Jun-08		360		220
Crooked Creek: Beaver Co.	OK620930-00-0100G	40885	15-Jul-08		80		70
Crooked Creek: Beaver Co.	OK620930-00-0100G	40939	21-Jul-08		100		10
Crooked Creek: Beaver Co.	OK620930-00-0100G	41249	25-Aug-08		370		240
Crooked Creek: Beaver Co.	OK620930-00-0100G	41590	29-Sep-08		50		100
Crooked Creek: Grant Co.	OK621000-06-0010C	37218	05-Jun-07		460		360
Crooked Creek: Grant Co.	OK621000-06-0010C	37824	09-Jul-07		70		110
Crooked Creek: Grant Co.	OK621000-06-0010C	37773	23-Jul-07		110		10
Crooked Creek: Grant Co.	OK621000-06-0010C	38012	06-Aug-07		20		80
Crooked Creek: Grant Co.	OK621000-06-0010C	38315	18-Sep-07		60		270
Crooked Creek: Grant Co.	OK621000-06-0010C	40040	15-Apr-08		600		220
Crooked Creek: Grant Co.	OK621000-06-0010C	40309	20-May-08		530		20
Crooked Creek: Grant Co.	OK621000-06-0010C	40548	24-Jun-08		380		600
Crooked Creek: Grant Co.	OK621000-06-0010C	41005	29-Jul-08		180		330
Crooked Creek: Grant Co.	OK621000-06-0010C	41394	03-Sep-08		110		110
Dead Indian Creek	OK620910-05-0080D	37126	29-May-07		360		440
Dead Indian Creek	OK620910-05-0080D	37315	25-Jun-07		950		1400
Dead Indian Creek	OK620910-05-0080D	37754	23-Jul-07		190		490
Dead Indian Creek	OK620910-05-0080D	37797	31-Jul-07	>	10000	>	10000
Dead Indian Creek	OK620910-05-0080D	38333	18-Sep-07		170		600
Dead Indian Creek	OK620910-05-0080D	39919	08-Apr-08	>	2000		1480
Dead Indian Creek	OK620910-05-0080D	40234	13-May-08		800		120
Dead Indian Creek	OK620910-05-0080D	40472	17-Jun-08		2600		3300
Dead Indian Creek	OK620910-05-0080D	40919	22-Jul-08		290		140
Dead Indian Creek	OK620910-05-0080D	41213	26-Aug-08		610		340
Dead Indian Creek	OK620910-05-0080D	41464	16-Sep-08		140		140
Dead Indian Creek	OK620910-05-0080D	41560	30-Sep-08		20		130
Deep Creek	OK620910-02-0250C	37135	30-May-07	>	2000	>	2000
Deep Creek	OK620910-02-0250C	37308	25-Jun-07		750		1200
Deep Creek	OK620910-02-0250C	37759	23-Jul-07		150		140
Deep Creek	OK620910-02-0250C	37792	30-Jul-07		50		120
Deep Creek	OK620910-02-0250C	38329	17-Sep-07		50		110
Deep Creek	OK620910-02-0250C	39913	07-Apr-08		270		100
Deep Creek	OK620910-02-0250C	40228	12-May-08		350		150

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Deep Creek	OK620910-02-0250C	40466	16-Jun-08		120		1120
Deep Creek	OK620910-02-0250C	40913	21-Jul-08		100		20
Deep Creek	OK620910-02-0250C	41207	25-Aug-08		300		160
Deep Creek	OK620910-02-0250C	41469	16-Sep-08		140		940
Deep Creek	OK620910-02-0250C	41554	29-Sep-08		250		140
Deer Creek	OK621000-04-0010D	37149	29-May-07		2000	>	5000
Deer Creek	OK621000-04-0010D	37330	25-Jun-07		80		60
Deer Creek	OK621000-04-0010D	37695	03-Jul-07		220		520
Deer Creek	OK621000-04-0010D	37814	30-Jul-07		30		20
Deer Creek	OK621000-04-0010D	38262	10-Sep-07		180		240
Deer Creek	OK621000-04-0010D	40262	12-May-08		480		60
Deer Creek	OK621000-04-0010D	41230	25-Aug-08		30		10
Doga Creek	OK621200-02-0020C	37161	30-May-07		460		100
Doga Creek	OK621200-02-0020C	37342	26-Jun-07		240		200
Doga Creek	OK621200-02-0020C	37983	06-Aug-07	<	10	<	10
Doga Creek	OK621200-02-0020C	38274	11-Sep-07		620		360
Doga Creek	OK621200-02-0020C	39947	08-Apr-08	>	2000	>	2000
Doga Creek	OK621200-02-0020C	40273	13-May-08		200		240
Doga Creek	OK621200-02-0020C	40946	22-Jul-08		25		10
Doga Creek	OK621200-02-0020C	41235	26-Aug-08		140	<	10
Doga Creek	OK621200-02-0020C	41577	29-Sep-08		30		60
Driftwood Creek	OK621010-03-0030C	37214	04-Jun-07		540		640
Driftwood Creek	OK621010-03-0030C	37829	10-Jul-07		180		510
Driftwood Creek	OK621010-03-0030C	37769	23-Jul-07	<	10		80
Driftwood Creek	OK621010-03-0030C	38016	06-Aug-07		130		30
Driftwood Creek	OK621010-03-0030C	38311	18-Sep-07		360		340
Driftwood Creek	OK621010-03-0030C	40036	15-Apr-08		160		130
Driftwood Creek	OK621010-03-0030C	40303	19-May-08		190		180
Driftwood Creek	OK621010-03-0030C	40542	23-Jun-08		120		280
Driftwood Creek	OK621010-03-0030C	40999	28-Jul-08		290	>	1000
Driftwood Creek	OK621010-03-0030C	41388	02-Sep-08		50		190
Duck Pond Creek	OK720500-02-0250F	37197	05-Jun-07		100		70
Duck Pond Creek	OK720500-02-0250F	37297	25-Jun-07		220		350
Duck Pond Creek	OK720500-02-0250F	37733	10-Jul-07		250		340
Duck Pond Creek	OK720500-02-0250F	37981	07-Aug-07		310		990
Duck Pond Creek	OK720500-02-0250F	38299	10-Sep-07		20		90
Duck Pond Creek	OK720500-02-0250F	40045	14-Apr-08		30		260
Duck Pond Creek	OK720500-02-0250F	40252	12-May-08	<	10		20
Duck Pond Creek	OK720500-02-0250F	40500	16-Jun-08		120		240
Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08		50		80
Duck Pond Creek	OK720500-02-0250F	40937	21-Jul-08		25		50
Duck Pond Creek	OK720500-02-0250F	41247	25-Aug-08		220		130
Duck Pond Creek	OK720500-02-0250F	41588	29-Sep-08		60		10
Dugout Creek	OK620900-03-0080C	37142	29-May-07		1500		2050
Dugout Creek	OK620900-03-0080C	37317	25-Jun-07		440		780
Dugout Creek	OK620900-03-0080C	37970	25-Jul-07		710		120
Dugout Creek	OK620900-03-0080C	37807	31-Jul-07		2600		3750
Dugout Creek	OK620900-03-0080C	38255	11-Sep-07		220		740
Dugout Creek	OK620900-03-0080C	39931	08-Apr-08	>	5000		3100
Dugout Creek	OK620900-03-0080C	40245	13-May-08		540		680

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Dugout Creek	OK620900-03-0080C	40482	17-Jun-08		1700		8900
Dugout Creek	OK620900-03-0080C	40929	22-Jul-08		120		50
Dugout Creek	OK620900-03-0080C	41223	26-Aug-08		90		50
Dugout Creek	OK620900-03-0080C	41564	29-Sep-08		180		30
Eagle Chief Creek: Lower	OK620920-04-0010C	37310	25-Jun-07		680		1380
Eagle Chief Creek: Lower	OK620920-04-0010C	37761	23-Jul-07		100		60
Eagle Chief Creek: Lower	OK620920-04-0010C	37794	30-Jul-07		80		20
Eagle Chief Creek: Lower	OK620920-04-0010C	38331	17-Sep-07	>	1000		70
Eagle Chief Creek: Lower	OK620920-04-0010C	39915	07-Apr-08		30		30
Eagle Chief Creek: Lower	OK620920-04-0010C	40230	12-May-08		820		180
Eagle Chief Creek: Lower	OK620920-04-0010C	40468	16-Jun-08		600		300
Eagle Chief Creek: Lower	OK620920-04-0010C	40915	21-Jul-08		30		30
Eagle Chief Creek: Lower	OK620920-04-0010C	41209	25-Aug-08		310		10
Eagle Chief Creek: Lower	OK620920-04-0010C	41471	16-Sep-08		1000		1700
Eagle Chief Creek: Lower	OK620920-04-0010C	41556	29-Sep-08		10		90
Eagle Chief Creek: Upper	OK620920-04-0010G	37210	04-Jun-07		560		740
Eagle Chief Creek: Upper	OK620920-04-0010G	37832	10-Jul-07		2400		3500
Eagle Chief Creek: Upper	OK620920-04-0010G	37766	23-Jul-07		120		90
Eagle Chief Creek: Upper	OK620920-04-0010G	38020	07-Aug-07		50		350
Eagle Chief Creek: Upper	OK620920-04-0010G	38310	17-Sep-07		210		230
Eagle Chief Creek: Upper	OK620920-04-0010G	40035	15-Apr-08		730		80
Eagle Chief Creek: Upper	OK620920-04-0010G	40306	19-May-08		90		90
Eagle Chief Creek: Upper	OK620920-04-0010G	40545	24-Jun-08		360		300
Eagle Chief Creek: Upper	OK620920-04-0010G	41002	28-Jul-08		40		630
Eagle Chief Creek: Upper	OK620920-04-0010G	41391	02-Sep-08		70		220
Euchee Creek	OK620900-01-0290D	37158	29-May-07		640		680
Euchee Creek	OK620900-01-0290D	37339	25-Jun-07		140		240
Euchee Creek	OK620900-01-0290D	37688	03-Jul-07		560		780
Euchee Creek	OK620900-01-0290D	37987	07-Aug-07		300		120
Euchee Creek	OK620900-01-0290D	38271	10-Sep-07		380		340
Euchee Creek	OK620900-01-0290D	39942	07-Apr-08		50		40
Euchee Creek	OK620900-01-0290D	40268	12-May-08		80		60
Euchee Creek	OK620900-01-0290D	40492	17-Jun-08		5300	>	10000
Euchee Creek	OK620900-01-0290D	40950	22-Jul-08		50		70
Euchee Creek	OK620900-01-0290D	41239	26-Aug-08		40		130
Euchee Creek	OK620900-01-0290D	41584	30-Sep-08		170		260
Gray Horse Creek	OK621200-01-0400C	37160	30-May-07		280		120
Gray Horse Creek	OK621200-01-0400C	37341	26-Jun-07		580		560
Gray Horse Creek	OK621200-01-0400C	37704	03-Jul-07		230		330
Gray Horse Creek	OK621200-01-0400C	37985	06-Aug-07		10		10
Gray Horse Creek	OK621200-01-0400C	38273	11-Sep-07		1680	>	2000
Gray Horse Creek	OK621200-01-0400C	39949	08-Apr-08	>	2000		1120
Gray Horse Creek	OK621200-01-0400C	40275	13-May-08		60		40
Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08		100	<	5
Gray Horse Creek	OK621200-01-0400C	41234	26-Aug-08		20		10
Gray Horse Creek	OK621200-01-0400C	41576	29-Sep-08		30		30
Griever Creek	OK620920-01-0130G	37199	04-Jun-07		360		440
Griever Creek	OK620920-01-0130G	37277	18-Jun-07		520		260
Griever Creek	OK620920-01-0130G	37739	09-Jul-07	>	2000	>	2000
Griever Creek	OK620920-01-0130G	37991	06-Aug-07		10		250

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Griever Creek	OK620920-01-0130G	38285	17-Sep-07		110		290
Griever Creek	OK620920-01-0130G	40031	15-Apr-08		70	<	10
Griever Creek	OK620920-01-0130G	40289	19-May-08		80		60
Griever Creek	OK620920-01-0130G	40567	24-Jun-08		160	<	20
Griever Creek	OK620920-01-0130G	40899	16-Jul-08		10		30
Griever Creek	OK620920-01-0130G	41007	28-Jul-08		65		350
Griever Creek	OK620920-01-0130G	41396	02-Sep-08		140		60
Griever Creek	OK620920-01-0130G	41783	06-Oct-08	>	2000	>	2000
Indian Creek: Major Co.	OK620910-02-0310C	37134	30-May-07		690		530
Indian Creek: Major Co.	OK620910-02-0310C	37309	25-Jun-07		340		920
Indian Creek: Major Co.	OK620910-02-0310C	37760	23-Jul-07		250		340
Indian Creek: Major Co.	OK620910-02-0310C	37793	30-Jul-07		200		260
Indian Creek: Major Co.	OK620910-02-0310C	38330	17-Sep-07		470		330
Indian Creek: Major Co.	OK620910-02-0310C	39914	07-Apr-08		230		70
Indian Creek: Major Co.	OK620910-02-0310C	40229	12-May-08		440		70
Indian Creek: Major Co.	OK620910-02-0310C	40467	16-Jun-08		520		1220
Indian Creek: Major Co.	OK620910-02-0310C	40914	21-Jul-08		200		540
Indian Creek: Major Co.	OK620910-02-0310C	41208	25-Aug-08		360		660
Indian Creek: Major Co.	OK620910-02-0310C	41470	16-Sep-08		1700		2700
Indian Creek: Major Co.	OK620910-02-0310C	41555	29-Sep-08		350		590
Indian Creek: Woodward Co.	OK720500-01-0200D	37203	04-Jun-07		330		220
Indian Creek: Woodward Co.	OK720500-01-0200D	37269	18-Jun-07		170		330
Indian Creek: Woodward Co.	OK720500-01-0200D	37737	09-Jul-07		310		360
Indian Creek: Woodward Co.	OK720500-01-0200D	37995	06-Aug-07		140		980
Indian Creek: Woodward Co.	OK720500-01-0200D	38289	17-Sep-07		140		550
Indian Creek: Woodward Co.	OK720500-01-0200D	40023	14-Apr-08		30		70
Indian Creek: Woodward Co.	OK720500-01-0200D	40287	19-May-08		60	<	10
Indian Creek: Woodward Co.	OK720500-01-0200D	40565	24-Jun-08		220		20
Indian Creek: Woodward Co.	OK720500-01-0200D	40896	16-Jul-08	>	1000	>	1000
Indian Creek: Woodward Co.	OK720500-01-0200D	41017	29-Jul-08		330		270
Indian Creek: Woodward Co.	OK720500-01-0200D	41405	03-Sep-08		180		150
Indian Creek: Woodward Co.	OK720500-01-0200D	41791	07-Oct-08		860		1520
Kingfisher Creek	OK620910-05-0010J	37127	29-May-07		800		1900
Kingfisher Creek	OK620910-05-0010J	37314	25-Jun-07		1350		1350
Kingfisher Creek	OK620910-05-0010J	37755	23-Jul-07		50		200
Kingfisher Creek	OK620910-05-0010J	37799	31-Jul-07	>	2000	>	2000
Kingfisher Creek	OK620910-05-0010J	38334	18-Sep-07		80		480
Kingfisher Creek	OK620910-05-0010J	39920	08-Apr-08		390		140
Kingfisher Creek	OK620910-05-0010J	40235	13-May-08		540		360
Kingfisher Creek	OK620910-05-0010J	40473	17-Jun-08		800		1600
Kingfisher Creek	OK620910-05-0010J	40920	22-Jul-08		140		160
Kingfisher Creek	OK620910-05-0010J	41214	26-Aug-08		360		790
Kingfisher Creek	OK620910-05-0010J	41465	16-Sep-08		160		320
Kingfisher Creek	OK620910-05-0010J	41561	30-Sep-08		10		60
Kiowa Creek: Beaver Co.	OK720500-02-0130M	37196	05-Jun-07		340		490
Kiowa Creek: Beaver Co.	OK720500-02-0130M	37301	26-Jun-07		220		210
Kiowa Creek: Beaver Co.	OK720500-02-0130M	37732	10-Jul-07		60		210
Kiowa Creek: Beaver Co.	OK720500-02-0130M	37980	07-Aug-07		280		190
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38306	11-Sep-07		80		20
Kiowa Creek: Beaver Co.	OK720500-02-0130M	40052	15-Apr-08		70		10

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Kiowa Creek: Beaver Co.	OK720500-02-0130M	40259	13-May-08		50		20
Kiowa Creek: Beaver Co.	OK720500-02-0130M	40507	17-Jun-08		20		100
Kiowa Creek: Beaver Co.	OK720500-02-0130M	40881	15-Jul-08	<	10		70
Kiowa Creek: Beaver Co.	OK720500-02-0130M	40944	22-Jul-08		5		40
Kiowa Creek: Beaver Co.	OK720500-02-0130M	41254	26-Aug-08		100		500
Kiowa Creek: Beaver Co.	OK720500-02-0130M	41595	30-Sep-08		30		10
Kiowa Creek: Harper Co.	OK720500-02-0130C	37193	04-Jun-07		160		90
Kiowa Creek: Harper Co.	OK720500-02-0130C	37302	26-Jun-07		220		280
Kiowa Creek: Harper Co.	OK720500-02-0130C	37729	09-Jul-07		370		30
Kiowa Creek: Harper Co.	OK720500-02-0130C	37977	06-Aug-07		420		120
Kiowa Creek: Harper Co.	OK720500-02-0130C	38302	10-Sep-07		290		70
Kiowa Creek: Harper Co.	OK720500-02-0130C	40051	15-Apr-08		20		20
Kiowa Creek: Harper Co.	OK720500-02-0130C	40258	13-May-08		90		10
Kiowa Creek: Harper Co.	OK720500-02-0130C	40506	17-Jun-08		1320		920
Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08		10		20
Kiowa Creek: Harper Co.	OK720500-02-0130C	40943	22-Jul-08		20		55
Kiowa Creek: Harper Co.	OK720500-02-0130C	41253	26-Aug-08		130		340
Kiowa Creek: Harper Co.	OK720500-02-0130C	41594	30-Sep-08	>	1000	>	1000
Lagoon Creek	OK620900-01-0180J	37155	29-May-07		640		380
Lagoon Creek	OK620900-01-0180J	37336	25-Jun-07		200		220
Lagoon Creek	OK620900-01-0180J	37691	03-Jul-07		800		980
Lagoon Creek	OK620900-01-0180J	37990	07-Aug-07	<	10		20
Lagoon Creek	OK620900-01-0180J	38268	10-Sep-07		580		720
Lagoon Creek	OK620900-01-0180J	39945	07-Apr-08		40		10
Lagoon Creek	OK620900-01-0180J	40271	12-May-08		60		60
Lagoon Creek	OK620900-01-0180J	40495	17-Jun-08		3100	>	10000
Lagoon Creek	OK620900-01-0180J	40953	22-Jul-08	<	10		60
Lagoon Creek	OK620900-01-0180J	41242	26-Aug-08		10		20
Lagoon Creek	OK620900-01-0180J	41581	30-Sep-08		70		70
Long Creek	OK620920-02-0080D	37209	05-Jun-07		130		90
Long Creek	OK620920-02-0080D	37275	18-Jun-07		440		300
Long Creek	OK620920-02-0080D	37745	10-Jul-07		370		490
Long Creek	OK620920-02-0080D	38001	07-Aug-07		60		300
Long Creek	OK620920-02-0080D	38295	18-Sep-07		110		490
Long Creek	OK620920-02-0080D	40029	15-Apr-08		70		10
Long Creek	OK620920-02-0080D	40311	20-May-08		220		20
Long Creek	OK620920-02-0080D	40557	23-Jun-08		60		40
Long Creek	OK620920-02-0080D	40895	16-Jul-08		250	>	1000
Long Creek	OK620920-02-0080D	41009	28-Jul-08		55		85
Long Creek	OK620920-02-0080D	41398	02-Sep-08		170		230
Long Creek	OK620920-02-0080D	41785	06-Oct-08		500		1060
Main Creek	OK620920-01-0180F	37200	04-Jun-07		360		340
Main Creek	OK620920-01-0180F	37276	18-Jun-07		390		310
Main Creek	OK620920-01-0180F	37738	09-Jul-07		160		150
Main Creek	OK620920-01-0180F	37992	06-Aug-07		170		270
Main Creek	OK620920-01-0180F	38286	17-Sep-07		160		460
Main Creek	OK620920-01-0180F	40030	15-Apr-08		20		30
Main Creek	OK620920-01-0180F	40288	19-May-08	<	10		10
Main Creek	OK620920-01-0180F	40566	24-Jun-08		120		80
Main Creek	OK620920-01-0180F	40900	16-Jul-08		170		100

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Main Creek	OK620920-01-0180F	41008	28-Jul-08		240		375
Main Creek	OK620920-01-0180F	41397	02-Sep-08		310		280
Main Creek	OK620920-01-0180F	41784	06-Oct-08	>	2000	>	2000
Medicine Lodge River	OK621010-03-0010D	37213	04-Jun-07		620		760
Medicine Lodge River	OK621010-03-0010D	37828	10-Jul-07		170		160
Medicine Lodge River	OK621010-03-0010D	37770	23-Jul-07		40		30
Medicine Lodge River	OK621010-03-0010D	38015	06-Aug-07		60		120
Medicine Lodge River	OK621010-03-0010D	38312	18-Sep-07		240		750
Medicine Lodge River	OK621010-03-0010D	40037	15-Apr-08		40		10
Medicine Lodge River	OK621010-03-0010D	40302	19-May-08		200		50
Medicine Lodge River	OK621010-03-0010D	40541	23-Jun-08		520		140
Medicine Lodge River	OK621010-03-0010D	40998	28-Jul-08		350		230
Medicine Lodge River	OK621010-03-0010D	41387	02-Sep-08		160	>	1000
Otter Creek: Logan Co.	OK620910-03-0040C	37143	30-May-07		8100		4200
Otter Creek: Logan Co.	OK620910-03-0040C	37323	26-Jun-07		120		460
Otter Creek: Logan Co.	OK620910-03-0040C	37963	25-Jul-07		70		130
Otter Creek: Logan Co.	OK620910-03-0040C	37811	31-Jul-07		30		100
Otter Creek: Logan Co.	OK620910-03-0040C	38258	11-Sep-07		3000		900
Otter Creek: Logan Co.	OK620910-03-0040C	39924	07-Apr-08		160		50
Otter Creek: Logan Co.	OK620910-03-0040C	40248	13-May-08		240		300
Otter Creek: Logan Co.	OK620910-03-0040C	40485	17-Jun-08		8800		7300
Otter Creek: Logan Co.	OK620910-03-0040C	40932	22-Jul-08		30		20
Otter Creek: Logan Co.	OK620910-03-0040C	41219	25-Aug-08		110		30
Otter Creek: Logan Co.	OK620910-03-0040C	41565	29-Sep-08		40		290
Otter Creek: Harper Co.	OK720500-02-0050B	37194	05-Jun-07		210		670
Otter Creek: Harper Co.	OK720500-02-0050B	37305	26-Jun-07		230	>	1000
Otter Creek: Harper Co.	OK720500-02-0050B	37730	10-Jul-07		190		540
Otter Creek: Harper Co.	OK720500-02-0050B	37978	07-Aug-07		980	>	1000
Otter Creek: Harper Co.	OK720500-02-0050B	40048	15-Apr-08		90		80
Otter Creek: Harper Co.	OK720500-02-0050B	40255	13-May-08		520		160
Otter Creek: Harper Co.	OK720500-02-0050B	40503	17-Jun-08	>	10000	>	10000
Otter Creek: Harper Co.	OK720500-02-0050B	40889	15-Jul-08		540		330
Otter Creek: Harper Co.	OK720500-02-0050B	40940	21-Jul-08		120		90
Otter Creek: Harper Co.	OK720500-02-0050B	41250	26-Aug-08	>	1000	>	1000
Otter Creek: Harper Co.	OK720500-02-0050B	41402	02-Sep-08		560		100
Otter Creek: Harper Co.	OK720500-02-0050B	41591	30-Sep-08		100		330
Palo Duro Creek	OK720500-02-0500G	37189	04-Jun-07		180		140
Palo Duro Creek	OK720500-02-0500G	37300	26-Jun-07		70		190
Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	>	1000	>	1000
Palo Duro Creek	OK720500-02-0500G	37973	06-Aug-07		330		940
Palo Duro Creek	OK720500-02-0500G	38297	10-Sep-07		510		240
Palo Duro Creek	OK720500-02-0500G	40043	14-Apr-08		10		40
Palo Duro Creek	OK720500-02-0500G	40250	12-May-08		40		70
Palo Duro Creek	OK720500-02-0500G	40498	16-Jun-08		1720		760
Palo Duro Creek	OK720500-02-0500G	40880	15-Jul-08		40		330
Palo Duro Creek	OK720500-02-0500G	40935	21-Jul-08		420		720
Palo Duro Creek	OK720500-02-0500G	41245	25-Aug-08		100		100
Palo Duro Creek	OK720500-02-0500G	41586	29-Sep-08		100		350
Persimmon Creek	OK720500-01-0150G	37202	04-Jun-07		840		510
Persimmon Creek	OK720500-01-0150G	37268	18-Jun-07		600		470

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Persimmon Creek	OK720500-01-0150G	37736	09-Jul-07		360		580
Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07		610		720
Persimmon Creek	OK720500-01-0150G	38288	17-Sep-07		570		840
Persimmon Creek	OK720500-01-0150G	40286	19-May-08		290		490
Persimmon Creek	OK720500-01-0150G	40564	24-Jun-08		640		240
Persimmon Creek	OK720500-01-0150G	40897	16-Jul-08	>	1000	>	1000
Persimmon Creek	OK720500-01-0150G	41018	29-Jul-08	>	500		330
Persimmon Creek	OK720500-01-0150G	41406	03-Sep-08		670		310
Persimmon Creek	OK720500-01-0150G	40022	14-Sep-08		270		610
Persimmon Creek	OK720500-01-0150G	41792	07-Oct-08	>	2000	>	2000
Pond Creek	OK621000-05-0010D	37219	05-Jun-07		320		960
Pond Creek	OK621000-05-0010D	37823	09-Jul-07		70		190
Pond Creek	OK621000-05-0010D	37764	23-Jul-07		100		170
Pond Creek	OK621000-05-0010D	38011	06-Aug-07		300		170
Pond Creek	OK621000-05-0010D	38316	18-Sep-07		190		210
Pond Creek	OK621000-05-0010D	40041	15-Apr-08		340		100
Pond Creek	OK621000-05-0010D	40310	20-May-08		200		370
Pond Creek	OK621000-05-0010D	40549	24-Jun-08		160		260
Pond Creek	OK621000-05-0010D	41006	29-Jul-08		90		240
Pond Creek	OK621000-05-0010D	41395	03-Sep-08		100		180
Red Rock Creek: Lower	OK621200-05-0010K	37137	29-May-07		1750		1950
Red Rock Creek: Lower	OK621200-05-0010K	37324	26-Jun-07		650		3000
Red Rock Creek: Lower	OK621200-05-0010K	37967	25-Jul-07		290		100
Red Rock Creek: Lower	OK621200-05-0010K	37808	31-Jul-07		2950		4150
Red Rock Creek: Lower	OK621200-05-0010K	38251	10-Sep-07	>	5000	>	5000
Red Rock Creek: Lower	OK621200-05-0010K	39927	07-Apr-08		520		420
Red Rock Creek: Lower	OK621200-05-0010K	40241	12-May-08		500		640
Red Rock Creek: Lower	OK621200-05-0010K	40479	16-Jun-08		6800	>	10000
Red Rock Creek: Lower	OK621200-05-0010K	40925	21-Jul-08		180		150
Red Rock Creek: Lower	OK621200-05-0010K	41217	25-Aug-08		140		10
Red Rock Creek: Lower	OK621200-05-0010K	41571	30-Sep-08		130		100
Red Rock Creek: Upper	OK621200-05-0010M	37136	29-May-07		1900		1900
Red Rock Creek: Upper	OK621200-05-0010M	37325	26-Jun-07		800		3850
Red Rock Creek: Upper	OK621200-05-0010M	37968	25-Jul-07		250		120
Red Rock Creek: Upper	OK621200-05-0010M	37803	30-Jul-07		150		90
Red Rock Creek: Upper	OK621200-05-0010M	38250	10-Sep-07	>	5000	>	5000
Red Rock Creek: Upper	OK621200-05-0010M	39926	07-Apr-08		460		520
Red Rock Creek: Upper	OK621200-05-0010M	40242	12-May-08		300		620
Red Rock Creek: Upper	OK621200-05-0010M	40480	16-Jun-08		2600		3700
Red Rock Creek: Upper	OK621200-05-0010M	40924	21-Jul-08		220		90
Red Rock Creek: Upper	OK621200-05-0010M	41218	25-Aug-08		220		230
Red Rock Creek: Upper	OK621200-05-0010M	41570	30-Sep-08		800		150
Salt Creek: Payne Co.	OK620900-02-0020D	37156	29-May-07		980		860
Salt Creek: Payne Co.	OK620900-02-0020D	37337	25-Jun-07		340		620
Salt Creek: Payne Co.	OK620900-02-0020D	37690	03-Jul-07		1100		800
Salt Creek: Payne Co.	OK620900-02-0020D	37989	07-Aug-07		40		110
Salt Creek: Payne Co.	OK620900-02-0020D	38269	10-Sep-07		200		440
Salt Creek: Payne Co.	OK620900-02-0020D	39944	07-Apr-08		230		40
Salt Creek: Payne Co.	OK620900-02-0020D	40270	12-May-08		100		60
Salt Creek: Payne Co.	OK620900-02-0020D	40494	17-Jun-08		8200	>	10000

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Salt Creek: Payne Co.	OK620900-02-0020D	40952	22-Jul-08		40		20
Salt Creek: Payne Co.	OK620900-02-0020D	41241	26-Aug-08		20		70
Salt Creek: Payne Co.	OK620900-02-0020D	41582	30-Sep-08		40		310
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37130	29-May-07		660		320
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37307	25-Jun-07		1050		1800
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37758	23-Jul-07		170		190
Salt Creek: Kingfisher Co.	OK620910-02-0100D	37791	30-Jul-07		60		140
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38328	17-Sep-07		70		150
Salt Creek: Kingfisher Co.	OK620910-02-0100D	39912	07-Apr-08		120	<	5
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40227	12-May-08		220		60
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40465	16-Jun-08		640		1080
Salt Creek: Kingfisher Co.	OK620910-02-0100D	40912	21-Jul-08		150		160
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41206	25-Aug-08		90		130
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41468	16-Sep-08		220		300
Salt Creek: Kingfisher Co.	OK620910-02-0100D	41553	29-Sep-08		180		190
Salt Creek: Lower	OK621200-04-0010F	37162	30-May-07		420		180
Salt Creek: Lower	OK621200-04-0010F	37343	26-Jun-07		1480	>	2000
Salt Creek: Lower	OK621200-04-0010F	37702	03-Jul-07		380		130
Salt Creek: Lower	OK621200-04-0010F	37984	06-Aug-07	<	10		10
Salt Creek: Lower	OK621200-04-0010F	38275	11-Sep-07		60		160
Salt Creek: Lower	OK621200-04-0010F	39948	08-Apr-08		1560	>	2000
Salt Creek: Lower	OK621200-04-0010F	40274	13-May-08		220		220
Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08		10	<	5
Salt Creek: Lower	OK621200-04-0010F	41236	26-Aug-08		20		100
Salt Creek: Lower	OK621200-04-0010F	41578	29-Sep-08		60		20
Salt Creek: Upper	OK621200-04-0010P	37154	29-May-07		1380		1620
Salt Creek: Upper	OK621200-04-0010P	37335	25-Jun-07		320		100
Salt Creek: Upper	OK621200-04-0010P	37701	03-Jul-07		330		80
Salt Creek: Upper	OK621200-04-0010P	37819	30-Jul-07		930		430
Salt Creek: Upper	OK621200-04-0010P	38267	10-Sep-07		500		540
Salt Creek: Upper	OK621200-04-0010P	39934	07-Apr-08		90		210
Salt Creek: Upper	OK621200-04-0010P	40265	13-May-08		360		50
Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08		40		25
Salt Creek: Upper	OK621200-04-0010P	41237	26-Aug-08		140		50
Salt Creek: Upper	OK621200-04-0010P	41579	29-Sep-08		20		10
Salt Fork of Arkansas River	OK621010-01-0010D	37217	05-Jun-07		40		20
Salt Fork of Arkansas River	OK621010-01-0010D	37825	09-Jul-07		10	<	10
Salt Fork of Arkansas River	OK621010-01-0010D	37772	23-Jul-07	<	10	<	10
Salt Fork of Arkansas River	OK621010-01-0010D	38013	06-Aug-07	<	10	<	10
Salt Fork of Arkansas River	OK621010-01-0010D	38314	18-Sep-07		30		250
Salt Fork of Arkansas River	OK621010-01-0010D	40039	15-Apr-08	<	10	<	10
Salt Fork of Arkansas River	OK621010-01-0010D	40308	20-May-08	<	10		10
Salt Fork of Arkansas River	OK621010-01-0010D	40547	24-Jun-08	<	20	<	20
Salt Fork of Arkansas River	OK621010-01-0010D	41004	29-Jul-08	<	10		50
Salt Fork of Arkansas River	OK621010-01-0010D	41393	03-Sep-08		10	>	1000
Sand Creek	OK620920-05-0050J	37206	05-Jun-07		210		450
Sand Creek	OK620920-05-0050J	37272	18-Jun-07		300		90
Sand Creek	OK620920-05-0050J	37742	10-Jul-07		440		610
Sand Creek	OK620920-05-0050J	37998	07-Aug-07		490	>	1000
Sand Creek	OK620920-05-0050J	38292	18-Sep-07	>	1000	>	1000

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Sand Creek	OK620920-05-0050J	40026	14-Apr-08		130		290
Sand Creek	OK620920-05-0050J	40314	20-May-08	>	1000		250
Sand Creek	OK620920-05-0050J	40560	23-Jun-08	>	2000	>	2000
Sand Creek	OK620920-05-0050J	40892	16-Jul-08	>	1000	>	1000
Sand Creek	OK620920-05-0050J	41012	28-Jul-08	>	500	>	500
Sand Creek	OK620920-05-0050J	41401	02-Sep-08		110		190
Sand Creek	OK620920-05-0050J	41788	06-Oct-08	>	2000	>	2000
Sandy Creek	OK621010-02-0010D	37216	05-Jun-07		560		840
Sandy Creek	OK621010-02-0010D	37826	09-Jul-07		90		120
Sandy Creek	OK621010-02-0010D	37771	23-Jul-07		170		40
Sandy Creek	OK621010-02-0010D	38014	06-Aug-07		140		20
Sandy Creek	OK621010-02-0010D	38313	18-Sep-07		580		420
Sandy Creek	OK621010-02-0010D	40038	15-Apr-08		240		140
Sandy Creek	OK621010-02-0010D	40301	19-May-08		630		110
Sandy Creek	OK621010-02-0010D	40540	23-Jun-08		720		920
Sandy Creek	OK621010-02-0010D	40997	28-Jul-08		270		170
Sandy Creek	OK621010-02-0010D	41386	02-Sep-08		130		140
Skeleton Creek: Lower	OK620910-03-0010F	37144	30-May-07		8800		4400
Skeleton Creek: Lower	OK620910-03-0010F	37322	26-Jun-07		950		2250
Skeleton Creek: Lower	OK620910-03-0010F	37962	25-Jul-07		70		230
Skeleton Creek: Lower	OK620910-03-0010F	37810	31-Jul-07		250		490
Skeleton Creek: Lower	OK620910-03-0010F	38257	11-Sep-07		2950		1350
Skeleton Creek: Lower	OK620910-03-0010F	39923	07-Apr-08		110		70
Skeleton Creek: Lower	OK620910-03-0010F	40247	13-May-08		120		300
Skeleton Creek: Lower	OK620910-03-0010F	40484	17-Jun-08		5000		3800
Skeleton Creek: Lower	OK620910-03-0010F	40931	21-Jul-08		40		10
Skeleton Creek: Lower	OK620910-03-0010F	41220	25-Aug-08		30		20
Skeleton Creek: Lower	OK620910-03-0010F	41566	29-Sep-08		20		50
Skeleton Creek: Upper	OK620910-03-0010S	37131	30-May-07		1940		680
Skeleton Creek: Upper	OK620910-03-0010S	37306	25-Jun-07		600		1300
Skeleton Creek: Upper	OK620910-03-0010S	37763	23-Jul-07		190		270
Skeleton Creek: Upper	OK620910-03-0010S	37796	30-Jul-07		50		40
Skeleton Creek: Upper	OK620910-03-0010S	38337	18-Sep-07		20		270
Skeleton Creek: Upper	OK620910-03-0010S	39917	07-Apr-08		200		100
Skeleton Creek: Upper	OK620910-03-0010S	40232	12-May-08		300		420
Skeleton Creek: Upper	OK620910-03-0010S	40470	16-Jun-08		200		1400
Skeleton Creek: Upper	OK620910-03-0010S	40917	21-Jul-08		60		60
Skeleton Creek: Upper	OK620910-03-0010S	41211	25-Aug-08		50		50
Skeleton Creek: Upper	OK620910-03-0010S	41473	16-Sep-08		300		320
Skeleton Creek: Upper	OK620910-03-0010S	41558	29-Sep-08		20		50
Spring Creek	OK720500-02-0100D	37198	05-Jun-07		100		240
Spring Creek	OK720500-02-0100D	37303	26-Jun-07		460		230
Spring Creek	OK720500-02-0100D	37734	10-Jul-07		600		370
Spring Creek	OK720500-02-0100D	37982	07-Aug-07		430		980
Spring Creek	OK720500-02-0100D	38305	11-Sep-07		120		660
Spring Creek	OK720500-02-0100D	40050	15-Apr-08		70		40
Spring Creek	OK720500-02-0100D	40257	13-May-08		120		60
Spring Creek	OK720500-02-0100D	40505	17-Jun-08	>	10000	>	10000
Spring Creek	OK720500-02-0100D	40887	15-Jul-08		130		280
Spring Creek	OK720500-02-0100D	40942	22-Jul-08		275	>	500

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Spring Creek	OK720500-02-0100D	41252	26-Aug-08		70		620
Spring Creek	OK720500-02-0100D	41593	30-Sep-08		130		210
Stillwater Creek: Lower	OK620900-04-0040C	37141	29-May-07		950		1100
Stillwater Creek: Lower	OK620900-04-0040C	37318	25-Jun-07		340		660
Stillwater Creek: Lower	OK620900-04-0040C	37965	25-Jul-07		230		290
Stillwater Creek: Lower	OK620900-04-0040C	37806	30-Jul-07		110		220
Stillwater Creek: Lower	OK620900-04-0040C	38254	10-Sep-07		600		1350
Stillwater Creek: Lower	OK620900-04-0040C	39930	08-Apr-08	>	10000	>	10000
Stillwater Creek: Lower	OK620900-04-0040C	40238	12-May-08		320		740
Stillwater Creek: Lower	OK620900-04-0040C	40928	21-Jul-08		100		20
Stillwater Creek: Lower	OK620900-04-0040C	41224	26-Aug-08		70		120
Stillwater Creek: Lower	OK620900-04-0040C	41574	30-Sep-08		80		110
Stillwater Creek: Upper	OK620900-04-0070T	37140	29-May-07		350		1700
Stillwater Creek: Upper	OK620900-04-0070T	37319	25-Jun-07		20		300
Stillwater Creek: Upper	OK620900-04-0070T	37964	25-Jul-07		60		390
Stillwater Creek: Upper	OK620900-04-0070T	37805	30-Jul-07		70		360
Stillwater Creek: Upper	OK620900-04-0070T	38253	10-Sep-07		400		1750
Stillwater Creek: Upper	OK620900-04-0070T	39929	07-Apr-08		70		100
Stillwater Creek: Upper	OK620900-04-0070T	40239	12-May-08		20		260
Stillwater Creek: Upper	OK620900-04-0070T	40476	16-Jun-08		400		720
Stillwater Creek: Upper	OK620900-04-0070T	40477	16-Jun-08		140		280
Stillwater Creek: Upper	OK620900-04-0070T	40927	21-Jul-08		100		170
Stillwater Creek: Upper	OK620900-04-0070T	41225	26-Aug-08		80		310
Stillwater Creek: Upper	OK620900-04-0070T	41573	30-Sep-08		570		660
Turkey Creek: Woods Co.	OK621010-01-0230G	37211	04-Jun-07		720		820
Turkey Creek: Woods Co.	OK621010-01-0230G	37831	10-Jul-07		890		620
Turkey Creek: Woods Co.	OK621010-01-0230G	37768	23-Jul-07		480		380
Turkey Creek: Woods Co.	OK621010-01-0230G	38018	07-Aug-07		340		820
Turkey Creek: Woods Co.	OK621010-01-0230G	38308	17-Sep-07	>	1000	>	1000
Turkey Creek: Woods Co.	OK621010-01-0230G	40033	14-Apr-08		420		550
Turkey Creek: Woods Co.	OK621010-01-0230G	40304	19-May-08		280		480
Turkey Creek: Woods Co.	OK621010-01-0230G	40543	23-Jun-08		740		880
Turkey Creek: Lower	OK620910-06-0010B	37129	29-May-07		2100		6200
Turkey Creek: Lower	OK620910-06-0010B	37312	25-Jun-07		400		1850
Turkey Creek: Lower	OK620910-06-0010B	37756	23-Jul-07		60		110
Turkey Creek: Lower	OK620910-06-0010B	37800	31-Jul-07		360		960
Turkey Creek: Lower	OK620910-06-0010B	38336	18-Sep-07		70		520
Turkey Creek: Lower	OK620910-06-0010B	39921	08-Apr-08		220		200
Turkey Creek: Lower	OK620910-06-0010B	40237	13-May-08		680		100
Turkey Creek: Lower	OK620910-06-0010B	40474	17-Jun-08		4000		6600
Turkey Creek: Lower	OK620910-06-0010B	40922	22-Jul-08		90		40
Turkey Creek: Lower	OK620910-06-0010B	41216	26-Aug-08		60		30
Turkey Creek: Lower	OK620910-06-0010B	41467	16-Sep-08		1100		2200
Turkey Creek: Lower	OK620910-06-0010B	41563	30-Sep-08		120		120
Turkey Creek: Upper	OK620910-06-0010T	37132	30-May-07	>	2000	>	2000
Turkey Creek: Upper	OK620910-06-0010T	37311	25-Jun-07		850		550
Turkey Creek: Upper	OK620910-06-0010T	37762	23-Jul-07		240		180
Turkey Creek: Upper	OK620910-06-0010T	37795	30-Jul-07		60		130
Turkey Creek: Upper	OK620910-06-0010T	38332	17-Sep-07		160		310
Turkey Creek: Upper	OK620910-06-0010T	39916	07-Apr-08		400		200

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E.Coli*		*Enterococcus*	
Turkey Creek: Upper	OK620910-06-0010T	40231	12-May-08		1600		100
Turkey Creek: Upper	OK620910-06-0010T	40469	16-Jun-08	<	100		800
Turkey Creek: Upper	OK620910-06-0010T	40916	21-Jul-08		130		80
Turkey Creek: Upper	OK620910-06-0010T	41210	25-Aug-08		100		90
Turkey Creek: Upper	OK620910-06-0010T	41472	16-Sep-08		1100		1400
Turkey Creek: Upper	OK620910-06-0010T	41557	29-Sep-08		90		210
Uncle John's Creek	OK620910-05-0030C	37125	29-May-07		900		3000
Uncle John's Creek	OK620910-05-0030C	37316	25-Jun-07		700		1350
Uncle John's Creek	OK620910-05-0030C	37753	23-Jul-07		220		270
Uncle John's Creek	OK620910-05-0030C	37798	31-Jul-07	>	2000	>	2000
Uncle John's Creek	OK620910-05-0030C	38338	18-Sep-07		350		670
Uncle John's Creek	OK620910-05-0030C	39918	08-Apr-08	>	10000	>	10000
Uncle John's Creek	OK620910-05-0030C	40233	13-May-08		960		400
Uncle John's Creek	OK620910-05-0030C	40471	17-Jun-08		2700		3600
Uncle John's Creek	OK620910-05-0030C	40918	22-Jul-08		380		590
Uncle John's Creek	OK620910-05-0030C	41212	26-Aug-08		250		830
Uncle John's Creek	OK620910-05-0030C	41463	16-Sep-08		320		840
Uncle John's Creek	OK620910-05-0030C	41559	30-Sep-08		100		380
West Clay Creek	OK621010-01-0090R	37215	05-Jun-07		520		900
West Clay Creek	OK621010-01-0090R	37827	09-Jul-07		180		180
West Clay Creek	OK621010-01-0090R	37765	23-Jul-07		20		90
West Clay Creek	OK621010-01-0090R	38019	07-Aug-07		80		160
West Clay Creek	OK621010-01-0090R	38307	17-Sep-07		100		90
West Clay Creek	OK621010-01-0090R	40032	14-Apr-08		80		70
West Clay Creek	OK621010-01-0090R	40307	20-May-08		370		170
West Clay Creek	OK621010-01-0090R	40546	24-Jun-08		380		540
West Clay Creek	OK621010-01-0090R	41003	29-Jul-08		190		460
West Clay Creek	OK621010-01-0090R	41392	02-Sep-08		40		10
Wolf Creek: Lower	OK720500-02-0030M	37205	04-Jun-07		40		80
Wolf Creek: Lower	OK720500-02-0030M	37271	18-Jun-07		60		20
Wolf Creek: Lower	OK720500-02-0030M	37741	09-Jul-07	<	10		20
Wolf Creek: Lower	OK720500-02-0030M	37997	06-Aug-07		50		10
Wolf Creek: Lower	OK720500-02-0030M	38291	17-Sep-07		110		70
Wolf Creek: Lower	OK720500-02-0030M	40025	14-Apr-08		10		20
Wolf Creek: Lower	OK720500-02-0030M	40316	20-May-08		10		60
Wolf Creek: Lower	OK720500-02-0030M	40562	23-Jun-08		20		20
Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08		20		40
Wolf Creek: Lower	OK720500-02-0030M	41013	28-Jul-08		40		50
Wolf Creek: Lower	OK720500-02-0030M	41403	02-Sep-08		50		120
Wolf Creek: Lower	OK720500-02-0030M	41789	06-Oct-08		360		280
Wolf Creek: Upper	OK720500-03-0010G	37204	04-Jun-07		440	>	1000
Wolf Creek: Upper	OK720500-03-0010G	37270	18-Jun-07		250		220
Wolf Creek: Upper	OK720500-03-0010G	37740	09-Jul-07		60		30
Wolf Creek: Upper	OK720500-03-0010G	37996	06-Aug-07		20		50
Wolf Creek: Upper	OK720500-03-0010G	38290	17-Sep-07		70		20
Wolf Creek: Upper	OK720500-03-0010G	40024	14-Apr-08		30		50
Wolf Creek: Upper	OK720500-03-0010G	40315	20-May-08		30		30
Wolf Creek: Upper	OK720500-03-0010G	40561	23-Jun-08		200		20
Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08		440		230
Wolf Creek: Upper	OK720500-03-0010G	41014	28-Jul-08		25		260

Appendix A.2. Raw bacteria data. Greater than or less than the detection limit is noted if applicable.

SiteName	WBID	SAMPLEID	Date	*E. Coli*	*Enterococcus*
Wolf Creek: Upper	OK720500-03-0010G	41404	03-Sep-08	80	10
Wolf Creek: Upper	OK720500-03-0010G	41790	07-Oct-08	130	250
Yellowstone Creek	OK621010-01-0270C	37212	04-Jun-07	310	40
Yellowstone Creek	OK621010-01-0270C	37830	10-Jul-07	230	160
Yellowstone Creek	OK621010-01-0270C	37767	23-Jul-07	30	150
Yellowstone Creek	OK621010-01-0270C	38017	07-Aug-07	480	40
Yellowstone Creek	OK621010-01-0270C	38309	17-Sep-07	130	60
Yellowstone Creek	OK621010-01-0270C	40034	14-Apr-08	170	20
Yellowstone Creek	OK621010-01-0270C	40305	19-May-08	110	10
Yellowstone Creek	OK621010-01-0270C	40544	23-Jun-08	80	40

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Alkalinity (CaCO3)	Beaver Creek: Logan Co.	OK620900-03-0230C	19	2	273.2	16.1	70.2	117	225	281	327	365
Alkalinity (CaCO3)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	174.1	13.9	59	91	125.3	163.5	210.8	303
Alkalinity (CaCO3)	Bent Creek	OK720500-01-0070D	21	0	252.14	4.53	20.74	217	232.5	256	271	286
Alkalinity (CaCO3)	Bitter Creek	OK621100-00-0100G	18	0	224.3	15.6	66.3	111	178.3	221.5	281	315
Alkalinity (CaCO3)	Black Bear Creek: Lower	OK621200-03-0010D	21	0	195.3	20.6	94.4	68	105.5	208	262	357
Alkalinity (CaCO3)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	231.8	23	102.7	76.4	106.5	274.5	318	363
Alkalinity (CaCO3)	Black Bear Creek: Upper	OK621200-03-0010W	18	3	242.5	22.6	96	87.6	133.3	281.5	313.3	363
Alkalinity (CaCO3)	Bois d'Arc Creek	OK621000-03-0010C	18	0	231.2	13.8	58.7	83	190.5	238	279.3	321
Alkalinity (CaCO3)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	165.95	9.81	44.97	38	142.5	183	201.5	215
Alkalinity (CaCO3)	Buffalo Creek: Upper	OK620920-05-0010P	21	0	200.1	14.9	68.3	2.1	160	230	242.5	270
Alkalinity (CaCO3)	Chickaskia River: Lower	OK621100-00-0010B	17	0	199.6	11.5	47.6	114	174	208	235	264
Alkalinity (CaCO3)	Chickaskia River: Upper	OK621100-00-0010M	17	0	195.7	12.9	53.2	84	152	188	242.5	278
Alkalinity (CaCO3)	Chilocco Creek	OK621210-00-0270C	18	0	211.5	20.6	87.4	0	146.3	207.5	283.5	333
Alkalinity (CaCO3)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	225.67	7.06	32.35	139	220.5	232	244	288
Alkalinity (CaCO3)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	293.4	25.2	106.9	113	222.3	300.5	361.5	508
Alkalinity (CaCO3)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	239.19	6.56	30.05	139	223.5	247	262	270
Alkalinity (CaCO3)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	207.86	2.91	13.34	178	201	205	219.5	230
Alkalinity (CaCO3)	Cooper Creek	OK620910-02-0040C	21	0	293.8	16.7	76.6	74	261.5	312	338.5	409
Alkalinity (CaCO3)	Cottonwood Creek	OK620910-04-0010D	18	3	239.9	13.1	55.5	97	208.8	243	270.3	380
Alkalinity (CaCO3)	Council Creek	OK620900-02-0050H	22	0	258.7	39.6	185.9	68	136.8	220	316.8	988
Alkalinity (CaCO3)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	212.43	3.3	15.11	178	206	215	222	236
Alkalinity (CaCO3)	Crooked Creek: Grant Co.	OK621000-06-0010C	21	0	320.6	19.2	88	27.6	305.5	337	367.5	432
Alkalinity (CaCO3)	Dead Indian Creek	OK620910-05-0080D	21	0	270.1	16.5	75.8	32.3	254.5	296	318	354
Alkalinity (CaCO3)	Deep Creek	OK620910-02-0250C	21	0	245.3	11.2	51.4	92	222	250	288	324
Alkalinity (CaCO3)	Deer Creek	OK621000-04-0010D	18	0	242.8	16.3	69.4	114	173.8	240	297.8	365
Alkalinity (CaCO3)	Doga Creek	OK621200-02-0020C	20	0	199.7	14.7	65.8	87	140.8	212.5	256.8	297
Alkalinity (CaCO3)	Driftwood Creek	OK621010-03-0030C	21	0	299.2	14.5	66.4	88	278.5	305	342	405
Alkalinity (CaCO3)	Duck Pond Creek	OK720500-02-0250F	21	0	211	2.93	13.42	176	202.5	213	219	240
Alkalinity (CaCO3)	Dugout Creek	OK620900-03-0080C	21	0	273.2	17.3	79.2	106	234	290	319	400
Alkalinity (CaCO3)	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	260.6	10.1	46.4	170	227.5	256	294.5	347
Alkalinity (CaCO3)	Eagle Chief Creek: Upper	OK620920-04-0010G	21	0	234.3	15.1	69.1	17.1	187.5	249	283.5	318
Alkalinity (CaCO3)	Euchee Creek	OK620900-01-0290D	21	0	208.7	15	68.8	76	143	228	262.5	302
Alkalinity (CaCO3)	Gray Horse Creek	OK621200-01-0400C	20	0	153.3	10.1	45.1	76	108	168.5	195	209
Alkalinity (CaCO3)	Griever Creek	OK620920-01-0130G	21	0	183	10.8	49.6	87	151.5	184	213.5	286
Alkalinity (CaCO3)	Indian Creek: Major Co.	OK620910-02-0310C	21	0	281.19	8.75	40.08	195	266	284	299	369
Alkalinity (CaCO3)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	238.81	4.81	22.03	202	221.5	237	255.5	288
Alkalinity (CaCO3)	Kingfisher Creek	OK620910-05-0010J	21	0	280.4	11.3	52	152	254.5	284	313	412
Alkalinity (CaCO3)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	216.29	3.48	15.97	184	204.5	219	228	246
Alkalinity (CaCO3)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	213.38	3.48	15.94	177	202.5	212	227	237
Alkalinity (CaCO3)	Lagoon Creek	OK620900-01-0180J	21	0	167.7	15.6	71.4	78	99.5	165	217	370
Alkalinity (CaCO3)	Long Creek	OK620920-02-0080D	19	2	162.95	5.78	25.2	114	150	163	177	208
Alkalinity (CaCO3)	Main Creek	OK620920-01-0180F	21	0	166.81	7.19	32.96	91	162	175	184.5	210

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Alkalinity (CaCO3)	Medicine Lodge River	OK621010-03-0010D	21	0	191.05	6.9	31.62	120	164.5	196	209	248
Alkalinity (CaCO3)	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	256.74	6.63	28.91	193	242	258	274	322
Alkalinity (CaCO3)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	301.7	19.8	88.4	68	262	326.5	360.5	395
Alkalinity (CaCO3)	Palo Duro Creek	OK720500-02-0500G	21	1	233.2	10.5	48.2	132	186	253	267.5	305
Alkalinity (CaCO3)	Persimmon Creek	OK720500-01-0150G	21	0	286.33	6.78	31.09	219	266.5	288	307.5	340
Alkalinity (CaCO3)	Pond Creek	OK621000-05-0010D	21	0	317.9	25	114.5	78	228.5	352	416.5	470
Alkalinity (CaCO3)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	254.5	27.5	122.8	57.5	157	238.5	381.5	420
Alkalinity (CaCO3)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	295	25.6	114.4	74	193.5	323	394.5	443
Alkalinity (CaCO3)	Salt Creek: Lower	OK621200-04-0010F	20	0	185.05	9.27	41.45	88	148.25	196	214	252
Alkalinity (CaCO3)	Salt Creek: Upper	OK621200-04-0010P	19	0	172	12.1	52.6	89	121	174	210	260
Alkalinity (CaCO3)	Salt Fork of Arkansas River	OK621010-01-0010D	21	0	145.62	8.44	38.69	91	118	140	169	231
Alkalinity (CaCO3)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	220.71	7.34	33.64	164	198.5	224	235	301
Alkalinity (CaCO3)	Salt Creek: Payne Co.	OK620900-02-0020D	21	0	207.4	16.3	74.8	67	144	233	266	308
Alkalinity (CaCO3)	Sand Creek	OK620920-05-0050J	21	2	236.7	10.4	47.8	58	219	240	262	297
Alkalinity (CaCO3)	Sandy Creek	OK621010-02-0010D	21	0	247.43	6.49	29.75	197	225.5	240	276	295
Alkalinity (CaCO3)	Skeleton Creek: Lower	OK620910-03-0010F	18	2	325.2	11.3	48.1	231	287.3	335.5	367	387
Alkalinity (CaCO3)	Skeleton Creek: Upper	OK620910-03-0010S	21	0	352.1	15.7	71.8	207	325	360	375	574
Alkalinity (CaCO3)	Spring Creek	OK720500-02-0100D	21	0	237.19	8.25	37.79	184	216.5	234	248.5	372
Alkalinity (CaCO3)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	174.2	11	47.9	66	143	178	222	230
Alkalinity (CaCO3)	Stillwater Creek: Upper	OK620900-04-0070T	22	1	202.1	19.5	91.4	110	129	150.5	301.3	367
Alkalinity (CaCO3)	Turkey Creek: Woods Co.	OK621010-01-0230G	19	0	246.42	7.87	34.32	153	230	250	270	296
Alkalinity (CaCO3)	Turkey Creek: Lower	OK620910-06-0010B	21	0	339.4	14.5	66.5	204	310.5	356	390	413
Alkalinity (CaCO3)	Turkey Creek: Upper	OK620910-06-0010T	20	1	325.4	18.6	83	156	248.8	332	409.3	432
Alkalinity (CaCO3)	Uncle John's Creek	OK620910-05-0030C	21	0	260.4	17	78	123	175	294	330	375
Alkalinity (CaCO3)	West Clay Creek	OK621010-01-0090R	21	0	340	20.2	92.4	8.2	305	362	390	473
Alkalinity (CaCO3)	Wolf Creek: Lower	OK720500-02-0030M	20	1	216.25	6.85	30.64	170	192.5	213.5	239	280
Alkalinity (CaCO3)	Wolf Creek: Upper	OK720500-03-0010G	21	0	224.43	4.63	21.24	180	206.5	228	244	260
Alkalinity (CaCO3)	Yellowstone Creek	OK621010-01-0270C	19	0	157.11	5.3	23.1	121	141	164	170	207
Ammonia (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.0291	0.0103	0.0459	0.0106	0.0106	0.0106	0.0106	0.189
Ammonia (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.01593	0.00436	0.0185	0.01061	0.01061	0.01061	0.01061	0.088
Ammonia (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.02439	0.00567	0.02534	0.01061	0.01061	0.01061	0.025	0.092
Ammonia (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	0.044	0.0133	0.055	0.0106	0.0106	0.0106	0.0675	0.202
Ammonia (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.0215	0.00576	0.02578	0.01061	0.01061	0.01061	0.01465	0.11
Ammonia (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.02224	0.00668	0.02989	0.01061	0.01061	0.01061	0.01061	0.136
Ammonia (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.01889	0.00442	0.01978	0.01061	0.01061	0.01061	0.01061	0.072
Ammonia (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.0347	0.014	0.0579	0.0106	0.0106	0.0106	0.044	0.249
Ammonia (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.0229	0.0115	0.0514	0.0106	0.0106	0.0106	0.0106	0.241
Ammonia (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.0405	0.016	0.0716	0.0106	0.0106	0.0106	0.0192	0.243
Ammonia (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	0.02144	0.00706	0.02909	0.01061	0.01061	0.01061	0.01061	0.118
Ammonia (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	0.01838	0.00584	0.02406	0.01061	0.01061	0.01061	0.01061	0.108
Ammonia (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.02798	0.00774	0.03193	0.01061	0.01061	0.01061	0.0355	0.115
Ammonia (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	0.02447	0.00935	0.04184	0.01061	0.01061	0.01061	0.01061	0.16

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Ammonia (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.0229	0.0103	0.0423	0.0106	0.0106	0.0106	0.0106	0.185
Ammonia (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.011326	0.00072	0.003218	0.010607	0.010607	0.010607	0.010607	0.025
Ammonia (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.01242	0.00102	0.00454	0.01061	0.01061	0.01061	0.01061	0.025
Ammonia (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.02469	0.00555	0.02482	0.01061	0.01061	0.01061	0.03925	0.1
Ammonia (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	0.026	0.01	0.0448	0.0106	0.0106	0.0106	0.0106	0.175
Ammonia (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.01595	0.00511	0.02287	0.01061	0.01061	0.01061	0.01061	0.113
Ammonia (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	0.04075	0.0098	0.04383	0.01061	0.01061	0.0133	0.06625	0.149
Ammonia (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	0.03216	0.00934	0.04175	0.01061	0.01061	0.01061	0.038	0.166
Ammonia (mg/L)	Deep Creek	OK620910-02-0250C	20	1	0.0392	0.0236	0.1053	0.0106	0.0106	0.0106	0.0106	0.475
Ammonia (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.0196	0.00488	0.02012	0.01061	0.01061	0.01061	0.019	0.084
Ammonia (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.01413	0.00159	0.00695	0.01061	0.01061	0.01061	0.015	0.035
Ammonia (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.03465	0.00729	0.03261	0.01061	0.01061	0.0148	0.05475	0.108
Ammonia (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.01555	0.00438	0.01957	0.01061	0.01061	0.01061	0.01061	0.098
Ammonia (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.0174	0.00541	0.02418	0.01061	0.01061	0.01061	0.01061	0.116
Ammonia (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	0.02515	0.00886	0.03961	0.01061	0.01061	0.01061	0.01765	0.182
Ammonia (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	0.01587	0.00345	0.01542	0.01061	0.01061	0.01061	0.01061	0.066
Ammonia (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.01515	0.00369	0.01649	0.01061	0.01061	0.01061	0.01061	0.083
Ammonia (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.01464	0.00205	0.00896	0.01061	0.01061	0.01061	0.01061	0.043
Ammonia (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.0137	0.00216	0.00967	0.01061	0.01061	0.01061	0.01061	0.047
Ammonia (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	0.0279	0.0168	0.0751	0.0106	0.0106	0.0106	0.0106	0.347
Ammonia (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	0.02164	0.00529	0.02368	0.01061	0.01061	0.01061	0.02125	0.107
Ammonia (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.01173	0.00112	0.00501	0.01061	0.01061	0.01061	0.01061	0.033
Ammonia (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.0266	0.00675	0.03018	0.01061	0.01061	0.01061	0.0424	0.108
Ammonia (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.01253	0.00192	0.00859	0.01061	0.01061	0.01061	0.01061	0.049
Ammonia (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.01557	0.0036	0.01608	0.01061	0.01061	0.01061	0.01061	0.08
Ammonia (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.011073	0.000466	0.001978	0.010607	0.010607	0.010607	0.010607	0.019
Ammonia (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.01412	0.00216	0.00966	0.01061	0.01061	0.01061	0.01061	0.046
Ammonia (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.011026	0.00042	0.001877	0.010607	0.010607	0.010607	0.010607	0.019
Ammonia (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Pond Creek	OK621000-05-0010D	20	1	0.0556	0.0297	0.1329	0.0106	0.0106	0.0106	0.0488	0.606
Ammonia (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.01969	0.00562	0.02515	0.01061	0.01061	0.01061	0.01061	0.112
Ammonia (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.01385	0.00242	0.01083	0.01061	0.01061	0.01061	0.01061	0.056
Ammonia (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.01163	0.00102	0.00445	0.01061	0.01061	0.01061	0.01061	0.03
Ammonia (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.0447	0.0201	0.0901	0.0106	0.0106	0.0106	0.0106	0.339
Ammonia (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	0.02159	0.0068	0.03039	0.01061	0.01061	0.01061	0.01061	0.12
Ammonia (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.01433	0.00372	0.01663	0.01061	0.01061	0.01061	0.01061	0.085
Ammonia (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.0293	0.0114	0.0512	0.0106	0.0106	0.0106	0.0275	0.237

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Ammonia (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	0.01644	0.00368	0.01646	0.01061	0.01061	0.01061	0.01061	0.081
Ammonia (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	0.01967	0.00661	0.02955	0.01061	0.01061	0.01061	0.01061	0.14
Ammonia (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	0.0235	0.0111	0.0495	0.0106	0.0106	0.0106	0.0106	0.232
Ammonia (mg/L)	Spring Creek	OK720500-02-0100D	19	2	0.01617	0.00507	0.0221	0.01061	0.01061	0.01061	0.01061	0.107
Ammonia (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	0.02657	0.00941	0.04102	0.01061	0.01061	0.01061	0.015	0.148
Ammonia (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.01686	0.00237	0.01085	0.01061	0.01061	0.01061	0.026	0.047
Ammonia (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.0258	0.0132	0.0562	0.0106	0.0106	0.0106	0.0106	0.249
Ammonia (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	0.0337	0.012	0.0538	0.0106	0.0106	0.0106	0.0207	0.179
Ammonia (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	0.0641	0.0431	0.193	0.0106	0.0106	0.0106	0.0184	0.867
Ammonia (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	0.0263	0.0103	0.0459	0.0106	0.0106	0.0106	0.0106	0.191
Ammonia (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.0353	0.0088	0.03934	0.01061	0.01061	0.0138	0.0385	0.125
Ammonia (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.0192	0.00476	0.02128	0.01061	0.01061	0.01061	0.01615	0.097
Ammonia (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Ammonia (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.010607	0	0	0.010607	0.010607	0.010607	0.010607	0.010607
Available Nitrogen (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.3498	0.0631	0.282	0.0389	0.1172	0.3097	0.4672	1.014
Available Nitrogen (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.2437	0.0422	0.1789	0.0389	0.1191	0.1977	0.3662	0.7247
Available Nitrogen (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.7159	0.0527	0.2357	0.3211	0.5097	0.7084	0.9537	1.1347
Available Nitrogen (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	1.081	0.288	1.189	0.039	0.5	0.755	1.396	5.245
Available Nitrogen (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.3528	0.0577	0.2582	0.0389	0.0704	0.3497	0.573	0.8947
Available Nitrogen (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.5078	0.0471	0.2107	0.0847	0.3222	0.5247	0.7222	0.8001
Available Nitrogen (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.8294	0.0926	0.414	0.3147	0.5847	0.7684	0.9722	2.0506
Available Nitrogen (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	1.074	0.139	0.573	0.258	0.61	1.001	1.415	2.389
Available Nitrogen (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.2633	0.0583	0.2607	0.0389	0.0389	0.1347	0.51	0.8047
Available Nitrogen (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.3863	0.0718	0.321	0.0389	0.0679	0.3459	0.6247	1.102
Available Nitrogen (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	1.157	0.173	0.712	0.265	0.548	0.815	1.842	2.495
Available Nitrogen (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	1.281	0.168	0.695	0.431	0.751	1.025	1.978	2.715
Available Nitrogen (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.575	0.173	0.712	0.115	0.165	0.305	0.625	3.025
Available Nitrogen (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	1.416	0.263	1.175	0.039	0.242	1.285	2.067	4.036
Available Nitrogen (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.733	0.585	2.41	0.039	0.039	0.039	0.268	10.065
Available Nitrogen (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.074	0.0335	0.1499	0.0389	0.0389	0.0389	0.0389	0.7106
Available Nitrogen (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.6634	0.0578	0.2583	0.3847	0.416	0.6064	0.8522	1.3306
Available Nitrogen (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	1.012	0.126	0.563	0.365	0.59	0.82	1.244	2.395
Available Nitrogen (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	3.348	0.403	1.801	0.355	1.734	3.316	5.252	6.135
Available Nitrogen (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.206	0.0367	0.1641	0.0389	0.0797	0.1747	0.2347	0.6771
Available Nitrogen (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.167	0.0449	0.2008	0.0389	0.0389	0.0389	0.2122	0.8047
Available Nitrogen (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	1.1113	0.07	0.3132	0.6547	0.8683	1.1189	1.2422	2.01
Available Nitrogen (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	1.2429	0.0938	0.4197	0.4961	0.9547	1.2311	1.4547	2.0347
Available Nitrogen (mg/L)	Deep Creek	OK620910-02-0250C	20	1	1.464	0.119	0.533	0.545	1.095	1.415	1.787	2.705
Available Nitrogen (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.957	0.156	0.642	0.039	0.55	0.905	1.513	2.215
Available Nitrogen (mg/L)	Doga Creek	OK621200-02-0020C	18	2	0.1382	0.0263	0.1115	0.0389	0.0389	0.1297	0.1897	0.4691
Available Nitrogen (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.3512	0.0584	0.2612	0.0389	0.1172	0.3127	0.5341	0.9321
Available Nitrogen (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.0976	0.0244	0.109	0.0389	0.0389	0.0446	0.1297	0.5106

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Available Nitrogen (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.2475	0.0524	0.2345	0.0389	0.0389	0.2497	0.3323	0.8901
Available Nitrogen (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	2.448	0.237	1.06	0.865	1.672	2.438	2.907	5.097
Available Nitrogen (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1.292	0.138	0.618	0.359	0.777	1.26	1.855	2.385
Available Nitrogen (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.2568	0.0708	0.3167	0.0389	0.0389	0.1777	0.3228	1.1131
Available Nitrogen (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.1232	0.0238	0.1036	0.0389	0.0389	0.1147	0.1847	0.3781
Available Nitrogen (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.1668	0.0401	0.1792	0.0389	0.0389	0.1197	0.2322	0.7506
Available Nitrogen (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	4.342	0.22	0.985	2.761	3.645	4.16	5.235	6.004
Available Nitrogen (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.4317	0.046	0.2057	0.0389	0.2522	0.3947	0.6422	0.7347
Available Nitrogen (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	1.334	0.139	0.622	0.415	0.882	1.23	1.876	2.593
Available Nitrogen (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.481	0.0496	0.222	0.1547	0.2922	0.4409	0.6447	0.9747
Available Nitrogen (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.5175	0.0582	0.2603	0.0389	0.2753	0.5209	0.7716	0.9061
Available Nitrogen (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.1202	0.0305	0.1363	0.0389	0.0389	0.0389	0.1616	0.5731
Available Nitrogen (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.2965	0.0492	0.2198	0.0389	0.1372	0.2347	0.4047	0.7206
Available Nitrogen (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.4145	0.0551	0.2463	0.0389	0.2272	0.4197	0.5847	1.0606
Available Nitrogen (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.834	0.104	0.465	0.155	0.615	0.721	1.022	2.205
Available Nitrogen (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.059	0.0111	0.0471	0.0389	0.0389	0.0389	0.0504	0.2231
Available Nitrogen (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.518	0.1	0.447	0.039	0.165	0.467	0.749	1.837
Available Nitrogen (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.0474	0.00584	0.02611	0.03889	0.03889	0.03889	0.03889	0.14475
Available Nitrogen (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.7091	0.0639	0.2857	0.1547	0.5072	0.6247	0.9212	1.2547
Available Nitrogen (mg/L)	Pond Creek	OK621000-05-0010D	20	1	1.119	0.136	0.61	0.329	0.827	0.969	1.316	3.285
Available Nitrogen (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.5736	0.0888	0.3972	0.0389	0.3155	0.5297	0.8787	1.6247
Available Nitrogen (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.6596	0.0932	0.4168	0.0389	0.3647	0.6694	0.7912	1.6306
Available Nitrogen (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.142	0.0295	0.1287	0.0389	0.0389	0.1147	0.2547	0.4147
Available Nitrogen (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.0758	0.0158	0.0672	0.0389	0.0389	0.0389	0.0997	0.2547
Available Nitrogen (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.2216	0.0409	0.183	0.0389	0.0515	0.1697	0.3022	0.6247
Available Nitrogen (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	1.533	0.202	0.903	0.039	0.77	1.463	2.274	3.145
Available Nitrogen (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.1376	0.0329	0.1473	0.0389	0.0389	0.0897	0.1891	0.6391
Available Nitrogen (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.1612	0.0354	0.1585	0.0389	0.0437	0.1097	0.1988	0.6506
Available Nitrogen (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	1.191	0.114	0.508	0.799	0.936	1.091	1.232	3.185
Available Nitrogen (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	2.059	0.264	1.179	0.385	1.097	1.873	2.788	4.665
Available Nitrogen (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	3.571	0.362	1.618	1.315	2.195	3.602	4.884	6.565
Available Nitrogen (mg/L)	Spring Creek	OK720500-02-0100D	19	2	1.448	0.118	0.514	0.039	1.125	1.525	1.805	2.231
Available Nitrogen (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	4.94	1.01	4.42	0.31	0.92	3.34	9.01	12.47
Available Nitrogen (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.493	0.105	0.48	0.039	0.17	0.311	0.578	1.806
Available Nitrogen (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.1965	0.0402	0.1706	0.0389	0.0883	0.1519	0.2373	0.6331
Available Nitrogen (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	1.455	0.124	0.555	0.475	0.952	1.58	1.971	2.315
Available Nitrogen (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	1.272	0.132	0.592	0.225	0.84	1.265	1.741	2.271
Available Nitrogen (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	1.656	0.12	0.535	0.841	1.289	1.603	1.982	2.701
Available Nitrogen (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.826	0.141	0.63	0.039	0.16	0.875	1.384	2.123
Available Nitrogen (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.1655	0.035	0.1567	0.0389	0.0389	0.1254	0.2688	0.5106
Available Nitrogen (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.7953	0.0822	0.3676	0.1447	0.5022	0.7247	1.1247	1.5106
Available Nitrogen (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.167	0.108	0.447	0.039	0.039	0.039	0.039	1.885

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Chloride (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	111.6	12.4	55.3	13.2	69.1	124.6	143.6	214
Chloride (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	10.4	1.08	4.59	4.5	6.55	10.05	13.15	23.2
Chloride (mg/L)	Bent Creek	OK720500-01-0070D	20	1	46.8	2.63	11.76	24.2	38.5	45.65	56.15	68.6
Chloride (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	575.4	57.1	235.4	222.9	304.6	615.8	765.6	946.1
Chloride (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	91.6	17.9	80.2	12.3	26	66.9	150.3	315.4
Chloride (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	162.5	28.6	127.9	14.9	47.3	138.5	232.8	447.2
Chloride (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	232.5	36.2	161.8	16	70	242.4	336.1	516.8
Chloride (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	110.44	7.77	32.02	18.5	100.3	123.6	129.9	155.5
Chloride (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	207.6	12.5	56	56	184.8	200.2	239.3	308.5
Chloride (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	185.7	10.1	45.4	34.8	167.4	185.3	217.3	254.1
Chloride (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	132.5	12.8	52.8	38.7	100.4	150.2	167.9	222
Chloride (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	81.14	9.32	38.43	23.9	60.75	80.7	92.15	187.8
Chloride (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	88.6	30.5	125.6	23.1	39.2	49.4	91	560.9
Chloride (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	1260.5	44.4	198.6	1061.5	1083.5	1255.2	1343.8	1887.8
Chloride (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	80.5	7.33	30.24	21.4	60.3	79.5	100.75	144.4
Chloride (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	286.36	9.99	44.66	229.8	247	282.75	319.5	388
Chloride (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	97.84	6.5	29.07	70	80.63	88.4	97.25	182.4
Chloride (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	292.4	22.6	101.1	65.6	244	316.4	340.3	462.9
Chloride (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	99.4	8.31	37.18	16.5	68.8	107.2	120.73	182.1
Chloride (mg/L)	Council Creek	OK620900-02-0050H	20	2	66.49	7.92	35.43	14.6	38.58	65.9	98.6	125.7
Chloride (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	1247	74.6	333.6	118.3	1142.2	1247.3	1399.3	1881.3
Chloride (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	268.3	31.9	142.5	65.3	147.6	233.1	404	507.6
Chloride (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	232.8	15.2	68.1	85.8	187.5	232.7	284.3	363.9
Chloride (mg/L)	Deep Creek	OK620910-02-0250C	20	1	527.8	72.9	326	36.7	181.9	494.1	835.1	957.4
Chloride (mg/L)	Deer Creek	OK621000-04-0010D	17	1	270.4	30.1	124.1	54.5	162.1	268.6	368.7	515.4
Chloride (mg/L)	Doga Creek	OK621200-02-0020C	19	1	29.34	5.78	25.17	6.8	16	23.3	34.2	123
Chloride (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	133.7	26	116.5	39.8	86.7	99.6	131	595.9
Chloride (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	211	6.51	29.11	128.9	201.45	206.25	225.33	285
Chloride (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	97.89	6.98	31.22	34.5	88.48	104.8	121.08	137.6
Chloride (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	76.85	4.13	18.49	32.2	63.25	80.4	90.1	111.8
Chloride (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	134.7	16.8	75.3	58.3	88.5	122.7	134.8	362.7
Chloride (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	29.59	3.66	16.37	6.7	17.55	27.35	37.1	75.5
Chloride (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	36.55	6.03	26.28	10.9	20.9	28.1	44	116.8
Chloride (mg/L)	Griever Creek	OK620920-01-0130G	20	1	222.4	17	76.1	65.5	192.5	217	262.2	430.9
Chloride (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	189.76	7.14	31.94	132.7	174.03	185.95	212.7	266.3
Chloride (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	207.84	9.06	40.51	150.9	175.95	196.75	237.2	293.6
Chloride (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	240.9	15.1	67.6	93.5	203.5	233.4	290.3	355.3
Chloride (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	148	12.7	57	105.1	114.5	122.5	183	328.9
Chloride (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	130.4	6.55	29.29	60.9	111.28	131.15	147.93	198
Chloride (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	44.24	7.37	32.98	8.2	18.1	33.5	69.4	144.7
Chloride (mg/L)	Long Creek	OK620920-02-0080D	20	1	224.2	10.8	48.3	147.1	185.9	211.1	255.6	335.1
Chloride (mg/L)	Main Creek	OK620920-01-0180F	20	1	239.1	14.9	66.7	79.1	200.9	222.7	284.2	376.8

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Chloride (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	111.9	18.5	82.8	44.2	76.2	92.3	121.6	433.7
Chloride (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	268.7	21.3	90.2	186.4	208.3	236.1	306.1	544.2
Chloride (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	105.9	10.8	48.4	17.6	70	110.1	140.8	181
Chloride (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	609.5	28.8	128.9	447.6	519.3	580.9	668.7	897.1
Chloride (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	58.01	3.07	13.72	40.9	45.68	57.45	65.15	98.4
Chloride (mg/L)	Pond Creek	OK621000-05-0010D	20	1	195.9	17.8	79.5	41.8	154.1	198.5	246.5	347.1
Chloride (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	131.9	21.4	95.9	11.9	50.1	98.3	204.4	327.8
Chloride (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	167.5	21.7	97.1	22.2	92	164.7	254.6	358.7
Chloride (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	35.55	8.36	36.45	5.4	15.2	21.6	30.9	152.2
Chloride (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	6.22	1.87	7.95	2	3.18	4.1	5.6	37
Chloride (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	1971	448	2005	223	927	1648	2177	9364
Chloride (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	5199	474	2118	885	3968	5266	6598	9398
Chloride (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	58.32	8.8	39.36	14.5	23.05	46.35	91.45	131.4
Chloride (mg/L)	Sand Creek	OK620920-05-0050J	20	3	154.2	12.7	56.7	20.9	117.9	152.2	203.7	275.4
Chloride (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	98.73	5.99	26.81	63.1	77.93	90.95	111.53	154.2
Chloride (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	200.5	17.7	79.3	14.9	149.9	225.7	243.1	311
Chloride (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	270.6	15.9	70.9	127.7	219.4	277.9	309.6	380
Chloride (mg/L)	Spring Creek	OK720500-02-0100D	19	2	36	1.84	8	22.7	29.9	35.2	39.9	57
Chloride (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	82.4	13.2	57.5	8.3	30.1	75.8	123.1	190.4
Chloride (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	37.74	3.84	17.61	17.7	22.65	31.4	55.1	77.6
Chloride (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	112.5	16	68.1	44.9	80.2	95.2	108.3	314.5
Chloride (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	228.2	16	71.4	94.4	177.2	236	285.6	345.6
Chloride (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	265.7	21.2	94.6	75.2	204.7	273.7	315.5	445.7
Chloride (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	62.5	4.95	22.14	26.3	38.9	65.15	76.3	104.7
Chloride (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	3689	762	3408	385	1085	2346	5365	10549
Chloride (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	166.66	8.07	36.09	69.7	155.45	167.2	184.75	234.1
Chloride (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	131.64	5.46	24.43	68.5	118.2	129.35	151.15	176.2
Chloride (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	67.48	3.26	13.44	47.8	52.4	68.9	79.55	86.9
Conductivity (uS/cm)	Beaver Creek: Logan Co.	OK620900-03-0230C	18	3	868.5	89.5	379.7	173.4	650.4	891	1118.8	1633
Conductivity (uS/cm)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	425	24.8	105.1	232.1	352.1	426	513.3	594
Conductivity (uS/cm)	Bent Creek	OK720500-01-0070D	21	0	1834	116	530	1050	1288	1870	2375	2540
Conductivity (uS/cm)	Bitter Creek	OK621100-00-0100G	18	0	3108	295	1253	342	1965	3417	4047	5000
Conductivity (uS/cm)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	687.3	80.3	359.3	208	313	744.5	894.3	1314
Conductivity (uS/cm)	Black Bear Creek: Middle	OK621200-03-0010M	17	4	971	142	584	192	419	939	1527	1863
Conductivity (uS/cm)	Black Bear Creek: Upper	OK621200-03-0010W	17	4	1082	156	642	159	516	1226	1622	2158
Conductivity (uS/cm)	Bois d'Arc Creek	OK621000-03-0010C	18	0	1377.2	81.9	347.4	340	1327	1419.5	1554	1943
Conductivity (uS/cm)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	2487	161	737	1036	1803	2730	3044	3423
Conductivity (uS/cm)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	2137	162	727	709	1443	2437	2708	2919
Conductivity (uS/cm)	Chickaskia River: Lower	OK621100-00-0010B	17	0	1028.7	61.5	253.8	429.5	948	1076	1184	1383
Conductivity (uS/cm)	Chickaskia River: Upper	OK621100-00-0010M	17	0	713.3	60.6	250	9.2	661	807	857.5	973
Conductivity (uS/cm)	Chilocco Creek	OK621210-00-0270C	17	1	792.8	96.4	397.5	353	612.5	727	831.5	2233
Conductivity (uS/cm)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	3586	298	1364	488	2497	3786	4834	5050

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Conductivity (uS/cm)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	1948	150	618	813	1399	1939	2431	3025
Conductivity (uS/cm)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	1600.3	68	311.7	1210	1330	1520	1835	2434
Conductivity (uS/cm)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	739.57	8.32	38.12	669	711	736	767	825
Conductivity (uS/cm)	Cooper Creek	OK620910-02-0040C	18	3	2182	149	634	534	1947	2316	2653	2903
Conductivity (uS/cm)	Cottonwood Creek	OK620910-04-0010D	17	4	1029.3	73.1	301.6	264.6	851	1124	1232	1328
Conductivity (uS/cm)	Council Creek	OK620900-02-0050H	20	2	625.3	63.2	282.5	167.8	467.6	555	823.8	1228
Conductivity (uS/cm)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	3778	180	826	2007	3430	4061	4428	4531
Conductivity (uS/cm)	Crooked Creek: Grant Co.	OK621000-06-0010C	19	2	1531.5	91.8	400	878	1289	1500	1603	2692
Conductivity (uS/cm)	Dead Indian Creek	OK620910-05-0080D	18	3	2306	121	514	1089	2062	2282	2626	3376
Conductivity (uS/cm)	Deep Creek	OK620910-02-0250C	19	2	2031	164	714	307	1541	2282	2605	2786
Conductivity (uS/cm)	Deer Creek	OK621000-04-0010D	18	0	1538	119	506	465	989	1673	1984	2138
Conductivity (uS/cm)	Doga Creek	OK621200-02-0020C	19	1	507	42.1	183.4	141.4	369.9	518	653	776
Conductivity (uS/cm)	Driftwood Creek	OK621010-03-0030C	19	2	2049	337	1470	235	1512	1785	2217	7440
Conductivity (uS/cm)	Duck Pond Creek	OK720500-02-0250F	21	0	1192.7	30.8	141.3	800	1104	1203	1265	1556
Conductivity (uS/cm)	Dugout Creek	OK620900-03-0080C	17	4	782.7	63.2	260.6	279	596	847	967	1175
Conductivity (uS/cm)	Eagle Chief Creek: Lower	OK620920-04-0010C	19	2	1286.9	77.1	336.2	149.3	1193	1284	1479	1710
Conductivity (uS/cm)	Eagle Chief Creek: Upper	OK620920-04-0010G	19	2	3479	694	3024	877	1775	2214	2675	9990
Conductivity (uS/cm)	Euchee Creek	OK620900-01-0290D	19	2	506.5	34.1	148.4	236.7	371.9	511	613	761
Conductivity (uS/cm)	Gray Horse Creek	OK621200-01-0400C	19	1	472.1	43.7	190.3	208.4	298.7	413.1	700	838
Conductivity (uS/cm)	Griever Creek	OK620920-01-0130G	21	0	2873	193	883	1283	2114	3246	3583	3825
Conductivity (uS/cm)	Indian Creek: Major Co.	OK620910-02-0310C	19	2	1206.8	62.2	271.3	696	1050	1168	1410	1755
Conductivity (uS/cm)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	1323.7	85.6	392.4	156	1123.5	1258	1625	1919
Conductivity (uS/cm)	Kingfisher Creek	OK620910-05-0010J	18	3	2304	87.5	371.2	1578	2137.5	2422	2496.8	3097
Conductivity (uS/cm)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	962.3	19.9	91.1	769	897	987	1041.5	1095
Conductivity (uS/cm)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	1006.5	21.8	99.8	708	953.5	1021	1089	1118
Conductivity (uS/cm)	Lagoon Creek	OK620900-01-0180J	19	2	431.3	45	196	145.8	282.2	399	594	789
Conductivity (uS/cm)	Long Creek	OK620920-02-0080D	20	1	2645	157	700	1226	2270	2925	3126	3391
Conductivity (uS/cm)	Main Creek	OK620920-01-0180F	21	0	2748	157	718	1251	2226	2988	3341	3586
Conductivity (uS/cm)	Medicine Lodge River	OK621010-03-0010D	18	3	1064.4	49.9	211.6	685	919.5	1029.5	1187.8	1468
Conductivity (uS/cm)	Otter Creek: Harper Co.	OK720500-02-0050B	17	2	1852.6	77.5	319.4	1378	1695.5	1785	1963	2818
Conductivity (uS/cm)	Otter Creek: Logan Co.	OK620910-03-0040C	18	3	953.9	84.2	357.3	262.6	812.5	1043	1192.3	1415
Conductivity (uS/cm)	Palo Duro Creek	OK720500-02-0500G	21	1	2469	143	653	1283	2022	2553	2990	3624
Conductivity (uS/cm)	Persimmon Creek	OK720500-01-0150G	21	0	964	23.6	108.4	690	911.5	970	1025.5	1179
Conductivity (uS/cm)	Pond Creek	OK621000-05-0010D	19	2	1364.5	81	353.1	496	1169	1360	1515	2027
Conductivity (uS/cm)	Red Rock Creek: Lower	OK621200-05-0010K	19	2	976	116	506	119	571	970	1399	1817
Conductivity (uS/cm)	Red Rock Creek: Upper	OK621200-05-0010M	17	4	1123	122	505	254	761	1212	1561	1846
Conductivity (uS/cm)	Salt Creek: Lower	OK621200-04-0010F	19	1	574	136	593	201	383	440	540	2962
Conductivity (uS/cm)	Salt Creek: Upper	OK621200-04-0010P	19	0	414.7	32.1	139.7	175.2	327.8	395.6	504	797
Conductivity (uS/cm)	Salt Fork of Arkansas River	OK621010-01-0010D	19	2	4449	454	1981	1023	2814	4405	5790	8310
Conductivity (uS/cm)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	17	4	12560	1328	5475	15	9120	12230	17310	21800
Conductivity (uS/cm)	Salt Creek: Payne Co.	OK620900-02-0020D	18	3	615	59.9	254.3	207	433.2	590	792.8	1147
Conductivity (uS/cm)	Sand Creek	OK620920-05-0050J	21	2	2750	226	1033	695	1749	3152	3489	4219

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Conductivity (uS/cm)	Sandy Creek	OK621010-02-0010D	19	2	885.4	27.7	120.7	737	793	846	961	1112
Conductivity (uS/cm)	Skeleton Creek: Lower	OK620910-03-0010F	17	3	1394	123	507	231	974	1633	1786	1872
Conductivity (uS/cm)	Skeleton Creek: Upper	OK620910-03-0010S	19	2	1818.2	79.3	345.7	1043	1648	1892	2025	2281
Conductivity (uS/cm)	Spring Creek	OK720500-02-0100D	20	1	618.8	12.1	54.1	535	582.8	602.5	649.3	755
Conductivity (uS/cm)	Stillwater Creek: Lower	OK620900-04-0040C	18	2	764.8	88.7	376.3	150.6	427.6	791	1137.8	1296
Conductivity (uS/cm)	Stillwater Creek: Upper	OK620900-04-0070T	20	3	562.8	54.5	243.7	323.6	364.3	446.7	805	1011
Conductivity (uS/cm)	Turkey Creek: Woods Co.	OK621010-01-0230G	17	2	2925	213	877	1207	2207	3395	3577	3886
Conductivity (uS/cm)	Turkey Creek: Lower	OK620910-06-0010B	18	3	1445.6	77.4	328.2	713	1247.3	1566	1671.8	1834
Conductivity (uS/cm)	Turkey Creek: Upper	OK620910-06-0010T	19	2	1654	109	476	625	1332	1738	1992	2452
Conductivity (uS/cm)	Uncle John's Creek	OK620910-05-0030C	17	4	863	64.5	265.9	439.4	622	902	1156.5	1223
Conductivity (uS/cm)	West Clay Creek	OK621010-01-0090R	19	2	4913	869	3788	8	1862	4950	5940	14770
Conductivity (uS/cm)	Wolf Creek: Lower	OK720500-02-0030M	20	1	1214.9	64.8	289.8	661	1082	1129	1465.8	1769
Conductivity (uS/cm)	Wolf Creek: Upper	OK720500-03-0010G	21	0	996.8	33.9	155.5	541	902.5	1038	1099.5	1187
Conductivity (uS/cm)	Yellowstone Creek	OK621010-01-0270C	17	2	2512	189	781	7	2626	2774	2853	2975
Dissolved Oxygen (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	9.156	0.595	2.662	5.71	6.645	8.91	11.005	13.91
Dissolved Oxygen (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	9.141	0.678	2.877	5.95	7.095	8.155	10.365	15.4
Dissolved Oxygen (mg/L)	Bent Creek	OK720500-01-0070D	21	0	9.367	0.495	2.269	6.02	7.37	9.13	11.345	13.92
Dissolved Oxygen (mg/L)	Bitter Creek	OK621100-00-0100G	18	0	9.058	0.638	2.707	4.66	6.875	9.33	10.845	14.22
Dissolved Oxygen (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	21	0	9.544	0.688	3.153	6.11	7.005	8.38	12.19	16.2
Dissolved Oxygen (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	21	0	9.312	0.609	2.789	6.06	7.13	8.69	11.465	15.45
Dissolved Oxygen (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	21	0	9.7	0.659	3.018	5.82	7.4	9	12.375	15.64
Dissolved Oxygen (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	18	0	8.604	0.61	2.586	5.54	6.428	7.925	10.603	13.97
Dissolved Oxygen (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	9.926	0.55	2.521	6.63	8.035	9.33	11.85	15.55
Dissolved Oxygen (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	21	0	11.016	0.753	3.451	4.84	8.15	11.96	14.03	15.18
Dissolved Oxygen (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	8.241	0.693	2.857	2.77	6.195	7.85	10.165	14.43
Dissolved Oxygen (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	10.644	0.608	2.508	6.16	8.79	10.22	12.525	15.16
Dissolved Oxygen (mg/L)	Chilocco Creek	OK621210-00-0270C	18	0	9.016	0.515	2.187	5.76	7.453	8.63	9.988	14.06
Dissolved Oxygen (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	9.701	0.312	1.431	6.54	9.03	9.7	10.755	12.42
Dissolved Oxygen (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	5.956	0.89	3.777	1.82	3.74	5.22	7.283	18.34
Dissolved Oxygen (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	8.944	0.603	2.764	4.44	6.305	9.16	11.185	13.46
Dissolved Oxygen (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	9.18	0.427	1.956	5.51	7.215	9.71	10.84	11.77
Dissolved Oxygen (mg/L)	Cooper Creek	OK620910-02-0040C	21	0	10.009	0.663	3.039	4.64	7.29	10.37	13.02	14.55
Dissolved Oxygen (mg/L)	Cottonwood Creek	OK620910-04-0010D	19	2	8.579	0.491	2.142	6.04	7.02	7.86	9.3	13.66
Dissolved Oxygen (mg/L)	Council Creek	OK620900-02-0050H	22	0	8.699	0.573	2.688	4.71	6.918	7.635	10.69	14.95
Dissolved Oxygen (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	10.071	0.502	2.303	5	8.25	10.46	12.235	13.3
Dissolved Oxygen (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	10.02	0.778	3.48	6.05	7.67	8.375	12.178	17.5
Dissolved Oxygen (mg/L)	Dead Indian Creek	OK620910-05-0080D	21	0	8.704	0.568	2.602	5.3	6.675	7.68	11.69	13.35
Dissolved Oxygen (mg/L)	Deep Creek	OK620910-02-0250C	21	0	9.45	0.611	2.8	3.27	7.855	8.87	11.545	14.38
Dissolved Oxygen (mg/L)	Deer Creek	OK621000-04-0010D	18	0	9.004	0.596	2.528	5.95	6.665	8.845	11.02	13.86
Dissolved Oxygen (mg/L)	Doga Creek	OK621200-02-0020C	20	0	9.101	0.606	2.71	4.48	7.213	8.11	10.613	14.85
Dissolved Oxygen (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	8.951	0.599	2.678	3.54	6.97	9.57	10.665	14.79
Dissolved Oxygen (mg/L)	Duck Pond Creek	OK720500-02-0250F	21	0	9.479	0.65	2.98	4.25	7.05	10.09	11.37	15.65

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Dissolved Oxygen (mg/L)	Dugout Creek	OK620900-03-0080C	21	0	9.19	0.709	3.251	5.72	6.765	7.82	11.595	17.42
Dissolved Oxygen (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	11.227	0.515	2.362	6.83	9.155	11.23	12.91	14.7
Dissolved Oxygen (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	11.039	0.57	2.551	6.43	8.57	12.05	13.073	13.89
Dissolved Oxygen (mg/L)	Euchee Creek	OK620900-01-0290D	21	0	8.376	0.625	2.863	4.48	6.07	7.72	10.61	14.06
Dissolved Oxygen (mg/L)	Gray Horse Creek	OK621200-01-0400C	20	0	8.817	0.738	3.298	4.5	5.748	8.92	11.2	16.82
Dissolved Oxygen (mg/L)	Griever Creek	OK620920-01-0130G	21	0	10.094	0.545	2.498	6.39	7.91	10.67	12.235	15.45
Dissolved Oxygen (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	21	0	10.011	0.487	2.232	7.36	8.22	9.21	11.615	14.76
Dissolved Oxygen (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	10.071	0.505	2.312	6.49	8.175	10.24	11.94	13.81
Dissolved Oxygen (mg/L)	Kingfisher Creek	OK620910-05-0010J	21	0	8.691	0.615	2.818	4.73	6.64	7.99	11	15.25
Dissolved Oxygen (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	9.68	0.45	2.064	6.1	7.905	9.85	11.635	13.04
Dissolved Oxygen (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	7.642	0.452	2.07	4.25	5.6	7.44	9.765	10.89
Dissolved Oxygen (mg/L)	Lagoon Creek	OK620900-01-0180J	21	0	8.502	0.591	2.709	4.06	6.225	8.22	10.41	13.77
Dissolved Oxygen (mg/L)	Long Creek	OK620920-02-0080D	20	1	10.159	0.658	2.943	4.16	7.708	10.935	12.06	15.8
Dissolved Oxygen (mg/L)	Main Creek	OK620920-01-0180F	21	0	9.687	0.442	2.027	7.35	7.84	9.55	11.265	13.66
Dissolved Oxygen (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	9.547	0.563	2.52	4.68	7.39	10.18	11.518	13.23
Dissolved Oxygen (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	8.026	0.546	2.382	3.6	6.2	7.74	9.57	12.7
Dissolved Oxygen (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	10.816	0.869	3.885	5.58	7.74	9.89	13.82	19.96
Dissolved Oxygen (mg/L)	Palo Duro Creek	OK720500-02-0500G	22	0	7.73	0.731	3.428	2.24	4.618	7.42	10.848	12.97
Dissolved Oxygen (mg/L)	Persimmon Creek	OK720500-01-0150G	21	0	9.474	0.525	2.407	3.87	7.575	9.57	11.43	13.12
Dissolved Oxygen (mg/L)	Pond Creek	OK621000-05-0010D	19	2	8.49	0.72	3.14	3.88	6.26	8.17	10.01	17.2
Dissolved Oxygen (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	21	0	8.35	0.658	3.016	5.02	5.9	7.31	11.74	15.1
Dissolved Oxygen (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	21	0	8.76	0.691	3.165	5.71	6.38	7.49	11.46	15.31
Dissolved Oxygen (mg/L)	Salt Creek: Lower	OK621200-04-0010F	20	0	9.285	0.596	2.665	6.12	7.14	8.52	11.41	14.65
Dissolved Oxygen (mg/L)	Salt Creek: Upper	OK621200-04-0010P	19	0	8.953	0.616	2.683	5.54	6.69	7.99	10.94	14.59
Dissolved Oxygen (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	10.438	0.61	2.73	5.34	7.865	11.045	11.998	15.17
Dissolved Oxygen (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	9.834	0.652	2.989	5.03	7.38	9.5	12.26	16.12
Dissolved Oxygen (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	21	0	8.287	0.608	2.788	4.84	5.87	7.57	10.34	13.68
Dissolved Oxygen (mg/L)	Sand Creek	OK620920-05-0050J	23	0	7.53	1	4.81	1.25	2.89	6.42	13.13	13.84
Dissolved Oxygen (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	9.234	0.412	1.84	6.6	7.458	9.235	11.05	12.63
Dissolved Oxygen (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	11.202	0.942	4.211	4.43	7.193	11.135	14.675	18.03
Dissolved Oxygen (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	21	0	9.917	0.591	2.707	5.93	7.8	9.36	12.225	15.15
Dissolved Oxygen (mg/L)	Spring Creek	OK720500-02-0100D	21	0	9.265	0.539	2.468	5.29	6.99	9.08	11.655	13.4
Dissolved Oxygen (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	20	0	8.76	0.741	3.315	5.41	5.953	7.55	11.045	16.2
Dissolved Oxygen (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	23	0	8.16	0.689	3.302	3.67	6.14	7.06	10.11	16.05
Dissolved Oxygen (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	19	0	9.625	0.58	2.53	6.45	7.45	9.36	11.9	14.08
Dissolved Oxygen (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	21	0	9.122	0.638	2.923	5.34	6.66	8.36	11.045	14.53
Dissolved Oxygen (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	10.61	1.02	4.58	4.76	7.16	9.72	13.2	19.2
Dissolved Oxygen (mg/L)	Uncle John's Creek	OK620910-05-0030C	21	0	9.33	0.533	2.445	6.56	7.215	8.55	11.875	13.57
Dissolved Oxygen (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	10.184	0.805	3.602	3.84	6.918	11.11	12.7	17.48
Dissolved Oxygen (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	9.723	0.498	2.228	5.41	7.635	9.835	11.645	14.53
Dissolved Oxygen (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	21	0	9.496	0.512	2.344	3.26	8.14	9.04	10.95	13.73
Dissolved Oxygen (mg/L)	Yellowstone Creek	OK621010-01-0270C	19	0	9.515	0.489	2.132	7.1	7.36	10.04	11.51	13.03

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
DO (percent saturation)	Beaver Creek: Logan Co.	OK620900-03-0230C	21	0	95.47	4.56	20.91	62.8	82.1	91.1	104.7	157.8
DO (percent saturation)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	89.09	3.15	13.35	67.7	81.05	86.7	101.9	114.7
DO (percent saturation)	Bent Creek	OK720500-01-0070D	21	0	86.55	1.9	8.73	68.8	80.9	85.3	94.25	103
DO (percent saturation)	Bitter Creek	OK621100-00-0100G	18	0	86.96	5.65	23.98	59.4	70.55	82.85	94.43	164.5
DO (percent saturation)	Black Bear Creek: Lower	OK621200-03-0010D	21	0	93.5	4.2	19.23	71	82.5	89.3	100.25	157.4
DO (percent saturation)	Black Bear Creek: Middle	OK621200-03-0010M	21	0	85.21	4.48	20.55	10.79	76.45	88	95.65	113.5
DO (percent saturation)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	94.49	4.41	19.72	68.9	81.13	92.5	101.08	153.6
DO (percent saturation)	Bois d'Arc Creek	OK621000-03-0010C	18	0	80.42	3.14	13.34	56.9	72.1	79.7	86.13	119.2
DO (percent saturation)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	95.09	3.06	14.02	75	82.95	90.5	106.75	120.8
DO (percent saturation)	Buffalo Creek: Upper	OK620920-05-0010P	21	0	108.56	7.51	34.44	55.7	76.6	111.1	131.7	200
DO (percent saturation)	Chickaskia River: Lower	OK621100-00-0010B	17	0	78.79	4.38	18.08	34.6	71.95	77.1	88.15	120.7
DO (percent saturation)	Chickaskia River: Upper	OK621100-00-0010M	17	0	96.94	7.07	29.15	8.99	88.35	98.9	107.8	139.9
DO (percent saturation)	Chilocco Creek	OK621210-00-0270C	18	0	85.52	3.11	13.17	63.9	75.03	84.1	95.08	119.5
DO (percent saturation)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	105.31	2.85	13.07	74.7	100.85	107.3	110.8	129.2
DO (percent saturation)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	52.09	6.08	25.81	21.4	31.43	50.6	60.93	135.4
DO (percent saturation)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	82.85	4.51	20.64	28.2	69.65	87.7	95.8	112.9
DO (percent saturation)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	86.32	2.48	11.37	59.6	80	84.8	93.75	105
DO (percent saturation)	Cooper Creek	OK620910-02-0040C	21	0	96.17	5.87	26.92	56.6	80.55	95	103.45	192.3
DO (percent saturation)	Cottonwood Creek	OK620910-04-0010D	19	2	87.4	2.67	11.63	66.9	80.9	86.2	93.2	112.7
DO (percent saturation)	Council Creek	OK620900-02-0050H	22	0	84.54	1.82	8.54	66	78.93	83.45	92.53	103.6
DO (percent saturation)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	107.06	4.19	19.19	70.6	93	109.6	121.3	138
DO (percent saturation)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	98.64	4.81	21.51	70.6	82.95	94.75	109.6	142.5
DO (percent saturation)	Dead Indian Creek	OK620910-05-0080D	21	0	80.53	2.12	9.71	60.5	75.45	80.6	89.2	92.7
DO (percent saturation)	Deep Creek	OK620910-02-0250C	21	0	90.23	4.07	18.65	35.8	82.2	91.8	103.6	118.3
DO (percent saturation)	Deer Creek	OK621000-04-0010D	18	0	84.33	3	12.72	64.9	76.63	82.85	90.95	117.2
DO (percent saturation)	Doga Creek	OK621200-02-0020C	20	0	86.75	2.85	12.72	52.4	80.25	86.35	94.08	109.7
DO (percent saturation)	Driftwood Creek	OK621010-03-0030C	20	1	87.93	5.23	23.41	37.5	71.6	86.9	98.7	139.1
DO (percent saturation)	Duck Pond Creek	OK720500-02-0250F	21	0	93.7	4.61	21.14	51.1	80.65	95.6	111	126.1
DO (percent saturation)	Dugout Creek	OK620900-03-0080C	21	0	80.82	4.6	21.1	9.37	72.55	83.4	92.5	120.6
DO (percent saturation)	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	108.94	4.39	20.09	82.6	94.55	102.3	118.6	155.1
DO (percent saturation)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	115.3	6.94	31.06	77.4	90.98	104.75	136.05	186.6
DO (percent saturation)	Euchee Creek	OK620900-01-0290D	21	0	81.15	3.38	15.51	55.5	68.5	83.3	92.6	117
DO (percent saturation)	Gray Horse Creek	OK621200-01-0400C	20	0	83.54	3.93	17.57	56.7	66.25	88.8	94.13	123.3
DO (percent saturation)	Griever Creek	OK620920-01-0130G	21	0	97.05	1.63	7.45	78.4	92.7	97.5	101.95	109.8
DO (percent saturation)	Indian Creek: Major Co.	OK620910-02-0310C	21	0	93.94	1.61	7.4	83.3	89.05	92.1	99.4	114
DO (percent saturation)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	94.93	1.71	7.82	78.3	90.2	94.3	100.1	108.4
DO (percent saturation)	Kingfisher Creek	OK620910-05-0010J	21	0	80.9	2.45	11.22	58.6	74.7	79.9	89.6	105.1
DO (percent saturation)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	94.7	2.21	10.14	70.1	87.7	96	103.5	108.9
DO (percent saturation)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	73.56	2.33	10.7	52	66.25	72.3	81.15	91.7
DO (percent saturation)	Lagoon Creek	OK620900-01-0180J	21	0	83.9	3.9	17.87	51.2	70.35	82.5	95.6	118.8
DO (percent saturation)	Long Creek	OK620920-02-0080D	20	1	91.92	5.71	25.53	39.5	73.88	95.15	106.55	160.7
DO (percent saturation)	Main Creek	OK620920-01-0180F	21	0	92.81	1.58	7.26	78.2	87.45	93.3	99.5	103.6

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
DO (percent saturation)	Medicine Lodge River	OK621010-03-0010D	20	1	91.77	2.98	13.31	48.2	90	93.05	98.83	111.4
DO (percent saturation)	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	72.09	2.82	12.28	34.1	67.5	73.2	76.5	93
DO (percent saturation)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	107.56	5.05	22.56	69.4	93.48	110	123.08	145.7
DO (percent saturation)	Palo Duro Creek	OK720500-02-0500G	22	0	72.57	4.72	22.16	27.4	55.3	77.9	93.5	107.1
DO (percent saturation)	Persimmon Creek	OK720500-01-0150G	21	0	88.21	2.53	11.57	45.1	85.75	88.5	93.35	103.2
DO (percent saturation)	Pond Creek	OK621000-05-0010D	20	1	82.17	4.65	20.79	36.6	76.63	79.95	87.7	141.1
DO (percent saturation)	Red Rock Creek: Lower	OK621200-05-0010K	21	0	79.19	2.61	11.97	62	70.3	77	88.1	104.5
DO (percent saturation)	Red Rock Creek: Upper	OK621200-05-0010M	21	0	82.29	3	13.75	66.3	74.05	79.8	90.9	122.6
DO (percent saturation)	Salt Creek: Lower	OK621200-04-0010F	20	0	88.93	2.1	9.38	73.4	78.75	90.35	96.2	104.9
DO (percent saturation)	Salt Creek: Upper	OK621200-04-0010P	19	0	89.14	2.68	11.66	68.5	81.1	89.9	98.6	108.2
DO (percent saturation)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	106.9	4.56	20.38	55.8	95.1	105.35	122.25	143.8
DO (percent saturation)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	90.48	2.83	12.95	60.3	86.1	90.9	100.7	108.9
DO (percent saturation)	Salt Creek: Payne Co.	OK620900-02-0020D	21	0	79.29	2.94	13.49	52.2	71.05	81.1	89.55	98.4
DO (percent saturation)	Sand Creek	OK620920-05-0050J	23	0	69.31	7.77	37.26	15.1	35.4	73.4	106.8	130
DO (percent saturation)	Sandy Creek	OK621010-02-0010D	20	1	88.8	2.3	10.28	73.5	80.75	86.1	99.73	109
DO (percent saturation)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	109.95	8.78	39.29	53	77.68	103.45	130.53	200
DO (percent saturation)	Skeleton Creek: Upper	OK620910-03-0010S	21	0	95.63	5.17	23.67	7.16	89.8	95.8	113.9	122.7
DO (percent saturation)	Spring Creek	OK720500-02-0100D	21	0	85.3	3.3	15.13	58.1	74.7	86.8	94.6	113.8
DO (percent saturation)	Stillwater Creek: Lower	OK620900-04-0040C	20	0	83.67	3.64	16.28	62.1	71.03	81.35	90.1	119.3
DO (percent saturation)	Stillwater Creek: Upper	OK620900-04-0070T	23	0	80.57	4.54	21.75	36.8	68.1	85.4	91	140.2
DO (percent saturation)	Turkey Creek: Woods Co.	OK621010-01-0230G	19	0	90.21	3.41	14.87	68.1	84.4	90.8	94.1	137.9
DO (percent saturation)	Turkey Creek: Lower	OK620910-06-0010B	21	0	85.56	2.84	13.02	61.4	74.35	85.6	98.4	105.7
DO (percent saturation)	Turkey Creek: Upper	OK620910-06-0010T	20	1	103.68	7.53	33.66	57.3	78.03	96.05	121.78	188.3
DO (percent saturation)	Uncle John's Creek	OK620910-05-0030C	21	0	86.3	1.67	7.64	70.9	80.65	86.3	92.15	102.5
DO (percent saturation)	West Clay Creek	OK621010-01-0090R	20	1	102.07	8.17	36.53	39	77.88	94.35	135.9	165.5
DO (percent saturation)	Wolf Creek: Lower	OK720500-02-0030M	20	1	99.23	3.12	13.97	64.6	91.43	98.35	106.4	136
DO (percent saturation)	Wolf Creek: Upper	OK720500-03-0010G	21	0	93.4	3.65	16.71	39.4	83	98.9	104.5	115.1
DO (percent saturation)	Yellowstone Creek	OK621010-01-0270C	19	0	98.13	2.06	8.96	80.6	92.7	98.7	101.5	121.5
Hardness (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	287.5	23.1	103.2	67.5	251.5	327	366	428.4
Hardness (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	237.7	31.7	134.7	104.9	170.9	198.8	242.1	710
Hardness (mg/L)	Bent Creek	OK720500-01-0070D	20	1	1396.7	82.5	369	128	1267.9	1485.7	1587.5	2010
Hardness (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	1118	109	447	440	648	1267	1534	1662
Hardness (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	215.3	24.9	111.4	64.6	111.3	200.6	311.8	409
Hardness (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	270.2	30.6	137	62.3	124	295.3	395.2	444
Hardness (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	316.3	37.3	166.9	49.7	159.8	360.5	441	568
Hardness (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	546.3	29.1	119.8	250	518.3	558.8	625.8	694
Hardness (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	1758	85.2	381	564	1585.9	1769.7	2002.9	2384.7
Hardness (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	1505.4	87.6	391.8	320	1361.1	1432.3	1742.4	2347
Hardness (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	365.6	21.3	87.6	163.2	324.3	403	420.5	455.3
Hardness (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	292.2	18	74.2	111.9	254.7	300.4	344.7	402
Hardness (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	314.9	24.8	102.1	162	264.1	300	315	614
Hardness (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	454.2	10.1	45.1	295	436.5	467.4	480.3	511.6

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hardness (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	729.5	57.7	238.1	264	530.9	789.4	918.3	1047.6
Hardness (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	473.3	39.7	177.5	265	364.8	416.2	558.3	1018.5
Hardness (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	313.5	73.3	327.8	205	234.5	241.5	251.1	1705
Hardness (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	753.5	52.2	233.3	154.2	683.8	788.6	903.2	1195
Hardness (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	348.2	28.1	125.6	124	246.5	361	425.6	656
Hardness (mg/L)	Council Creek	OK620900-02-0050H	20	2	290.8	25.6	114.5	69.6	185.8	321.8	388.5	441.7
Hardness (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	464.94	8.88	39.7	388	455	465.55	487.03	525.1
Hardness (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	19	2	411.5	27	117.5	224.6	331.7	387.8	500	650
Hardness (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	898.4	44.9	200.6	397.3	755	926.3	1031.9	1289.1
Hardness (mg/L)	Deep Creek	OK620910-02-0250C	20	1	1156.4	83.4	373	234.6	1012.3	1273.5	1367.5	1628.4
Hardness (mg/L)	Deer Creek	OK621000-04-0010D	17	1	449.8	36.3	149.5	139.9	311	503.3	543	674
Hardness (mg/L)	Doga Creek	OK621200-02-0020C	19	1	239	21.2	92.5	88.4	179	249.6	301.8	408
Hardness (mg/L)	Driftwood Creek	OK621010-03-0030C	19	2	989.3	62.6	273	293	905	1046.3	1193.8	1312
Hardness (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	276.09	6.27	28.03	198	260	283	294.15	310
Hardness (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	355.2	31.9	142.6	131.5	287	341	397.9	800
Hardness (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	627.8	30.2	135.2	430.4	502.3	634.9	721.8	920.7
Hardness (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1229.7	66.3	296.5	680	928.8	1339.5	1490.1	1576
Hardness (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	243.6	19.1	85.4	92.8	149.4	260.6	316.3	361
Hardness (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	195	17.8	77.7	66.7	132.8	182.5	247	359
Hardness (mg/L)	Griever Creek	OK620920-01-0130G	20	1	1877.2	78.5	351.3	1253.9	1678	1877.5	2089.7	2432.2
Hardness (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	498.2	15.7	70.2	294	458	493.4	550.3	649
Hardness (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	512.66	9.43	42.15	427.3	475.75	507.55	549.15	582.9
Hardness (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	886.1	32.9	146.9	551.1	795.2	906.4	990	1139.8
Hardness (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	285.17	4.93	22.07	245	269	285.05	299.18	320
Hardness (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	304.03	5.05	22.6	251.6	288.5	301.65	322.7	350
Hardness (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	192.5	17.5	78.1	84.7	109.5	193.8	272.6	303.6
Hardness (mg/L)	Long Creek	OK620920-02-0080D	20	1	1615.2	69.4	310.3	1140	1397.5	1529.9	1854.7	2402.3
Hardness (mg/L)	Main Creek	OK620920-01-0180F	20	1	1921.7	69.1	309.1	995	1810.8	1967.8	2078.2	2445
Hardness (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	443.5	32.4	144.9	4	410.7	454.9	545.3	658.3
Hardness (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	547.5	22.8	96.7	460.3	487.5	518.7	563.1	845
Hardness (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	333.2	27.1	121.3	84	286.8	369.4	401.2	498
Hardness (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	560.7	11	49.3	460	519.2	559	608.9	634.2
Hardness (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	411	10.6	47.6	300	377.1	413.9	444.1	495.3
Hardness (mg/L)	Pond Creek	OK621000-05-0010D	19	2	356.9	27.5	119.7	99.3	295.9	381.4	460	540
Hardness (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	295.1	33.6	150.4	37	193.5	282.4	441	522
Hardness (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	325	31.3	140	73.9	213.9	359.9	423.7	584
Hardness (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	249.6	18.7	81.7	137	179	241.6	327	411.8
Hardness (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	214.5	16.6	70.5	94.5	160.8	207.5	254.6	385
Hardness (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	19	2	553	31.8	138.6	214	523	581	612	870
Hardness (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	1458.1	47.7	213.2	1092	1264.3	1441.3	1647.2	1832
Hardness (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	245.7	20.9	93.4	79.4	171.4	249.7	308.5	385.4
Hardness (mg/L)	Sand Creek	OK620920-05-0050J	20	3	2154	122	547	240	1976	2189	2430	2913

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hardness (mg/L)	Sandy Creek	OK621010-02-0010D	19	2	311.9	14.8	64.7	222	261.7	298.1	340.6	465
Hardness (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	393.3	28.6	127.8	79.3	350.6	427.2	466.9	660
Hardness (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	440.4	16	71.7	248	409.7	459	483.7	534
Hardness (mg/L)	Spring Creek	OK720500-02-0100D	19	2	240.83	8.72	38.03	144	220	243.7	261.8	340
Hardness (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	251	30.5	132.8	60	158.1	215.5	342	600
Hardness (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	228.3	22.8	104.3	122.5	136.1	176.5	360.5	408
Hardness (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	2167	98.1	416	1170	1980.3	2237.4	2491.6	2691.5
Hardness (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	398.7	18.4	82.2	241.4	353.7	406.1	439.7	589
Hardness (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	19	2	381.9	22.3	97	169.1	300.6	406.5	450	512
Hardness (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	371.6	29.6	132.5	161.6	263.3	402.1	454	695
Hardness (mg/L)	West Clay Creek	OK621010-01-0090R	19	2	1464.2	59.7	260.3	949.3	1253	1485.8	1619.9	1875
Hardness (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	19	2	363.3	26.9	117.1	205.2	289.2	308	464	605
Hardness (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	320.98	6.55	29.27	230.9	315.1	324.65	334.28	375
Hardness (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	1936.7	53.9	222.3	1564	1790	1920	2005.9	2448.4
Flow (cfs)	Beaver Creek: Logan Co.	OK620900-03-0230C	7	14	4.279	0.977	2.584	0.97	1.77	5.18	6.69	6.97
Flow (cfs)	Beaver Creek: Osage Co.	OK621210-00-0050L	8	10	13.67	2.2	6.23	6.6	9.2	13.38	14.78	27.27
Flow (cfs)	Bent Creek	OK720500-01-0070D	19	2	14.55	3.05	13.28	1.15	8.58	11.45	14.48	58.52
Flow (cfs)	Bitter Creek	OK621100-00-0100G	14	4	13.93	2.15	8.03	4.86	8.03	11.01	18.33	30.31
Flow (cfs)	Black Bear Creek: Lower	OK621200-03-0010D	13	8	50.7	12.2	44	20.9	25.5	31.4	57.8	163.9
Flow (cfs)	Black Bear Creek: Middle	OK621200-03-0010M	7	14	28.5	10.9	28.8	11.4	14.2	14.5	36.8	90.8
Flow (cfs)	Black Bear Creek: Upper	OK621200-03-0010W	10	11	28.1	11.1	35	6.7	9.2	13.8	36.9	122.2
Flow (cfs)	Bois d'Arc Creek	OK621000-03-0010C	15	3	16.99	1.94	7.52	5.43	11.14	18.55	22.49	31.64
Flow (cfs)	Buffalo Creek: Lower	OK620920-05-0010G	18	3	7.234	0.987	4.189	2.47	3.13	7.665	9.653	17.09
Flow (cfs)	Buffalo Creek: Upper	OK620920-05-0010P	19	2	5.35	1.19	5.18	0.28	1.89	3.95	7.87	20.66
Flow (cfs)	Chickaskia River: Lower	OK621100-00-0010B	3	14	39.51	8.61	14.92	30.16	30.16	31.66	56.72	56.72
Flow (cfs)	Chickaskia River: Upper	OK621100-00-0010M	3	14	90.2	24.1	41.8	44.7	44.7	98.9	126.9	126.9
Flow (cfs)	Chilocco Creek	OK621210-00-0270C	10	8	7.04	1.42	4.49	0.51	2.29	9.16	10.62	12.91
Flow (cfs)	Cimarron River: Beaver Co.	OK620930-00-0010T	18	3	29.26	2.68	11.39	11.91	17.17	31.85	34.82	56.42
Flow (cfs)	Cimarron River: Cimarron Co.	OK720900-00-0180C	2	16	1.86	1.65	2.33	0.21	*	1.86	*	3.51
Flow (cfs)	Clear Creek: Beaver Co.	OK720500-02-0300F	11	10	3.87	1.9	6.29	0.01	0.03	2.23	3.34	21.37
Flow (cfs)	Clear Creek: Harper Co.	OK720500-02-0070G	18	3	5.882	0.522	2.214	3.08	4.185	5.505	7.04	10.86
Flow (cfs)	Cooper Creek	OK620910-02-0040C	17	4	10.17	2.06	8.48	2.57	4.57	7.63	11.35	37.55
Flow (cfs)	Cottonwood Creek	OK620910-04-0010D	6	15	55.7	14.3	35	17.9	28.8	49.5	79.3	118.7
Flow (cfs)	Council Creek	OK620900-02-0050H	19	3	9.92	4.55	19.84	0.45	1.53	3.06	10.1	86.68
Flow (cfs)	Crooked Creek: Beaver Co.	OK620930-00-0100G	12	9	7.69	1.22	4.23	2.7	4.21	6.97	11.3	16.71
Flow (cfs)	Crooked Creek: Grant Co.	OK621000-06-0010C	14	7	15.74	3.5	13.09	1.55	4.63	11.22	27.02	42.04
Flow (cfs)	Dead Indian Creek	OK620910-05-0080D	18	3	11.98	3.62	15.36	1.08	3.77	5.76	13.09	60.68
Flow (cfs)	Deep Creek	OK620910-02-0250C	18	3	20.6	11.5	49	1.4	2.5	6.5	14.2	213.4
Flow (cfs)	Deer Creek	OK621000-04-0010D	15	3	13.1	3.02	11.69	1.3	4.07	10.96	18.39	41.44
Flow (cfs)	Doga Creek	OK621200-02-0020C	11	9	3.74	2.47	8.2	0.14	0.18	0.85	2.92	28.21
Flow (cfs)	Driftwood Creek	OK621010-03-0030C	15	6	6.77	1.12	4.33	0.08	3.48	6.48	9.65	16.35
Flow (cfs)	Duck Pond Creek	OK720500-02-0250F	16	5	0.7081	0.0882	0.3528	0.16	0.4375	0.755	0.9075	1.48

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Flow (cfs)	Dugout Creek	OK620900-03-0080C	16	5	44.7	30.8	123.4	0.4	0.9	6.2	20.2	495.6
Flow (cfs)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	23.73	3.32	14.86	8.23	12.52	18.87	29.8	58.88
Flow (cfs)	Eagle Chief Creek: Upper	OK620920-04-0010G	17	4	6.937	0.948	3.91	0.84	4.41	5.09	9.61	14.65
Flow (cfs)	Euchee Creek	OK620900-01-0290D	0	21	*	*	*	*	*	*	*	*
Flow (cfs)	Gray Horse Creek	OK621200-01-0400C	18	2	9.96	3.99	16.93	0.08	0.42	2.08	11.39	57
Flow (cfs)	Griever Creek	OK620920-01-0130G	19	2	3.21	1.24	5.41	0.04	0.94	1.6	2.42	21.93
Flow (cfs)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	18.51	3.75	16.75	4.02	8.83	12.44	19.44	71
Flow (cfs)	Indian Creek: Woodward Co.	OK720500-01-0200D	19	2	5.362	0.704	3.07	1.26	3.1	4.73	6.62	13.28
Flow (cfs)	Kingfisher Creek	OK620910-05-0010J	17	4	23.87	4.25	17.51	6.28	9.42	16.64	34.69	58.47
Flow (cfs)	Kiowa Creek: Harper Co.	OK720500-02-0130C	18	3	15.44	4.1	17.39	1.61	6.98	11.02	13.63	65.39
Flow (cfs)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	18	3	6.14	1.52	6.45	1.56	3.52	4.38	5.16	26.78
Flow (cfs)	Lagoon Creek	OK620900-01-0180J	15	6	11.08	3.99	15.44	0.03	0.4	2.11	24.39	49.1
Flow (cfs)	Long Creek	OK620920-02-0080D	14	7	2.227	0.553	2.07	0.62	1.165	1.44	2.64	8.96
Flow (cfs)	Main Creek	OK620920-01-0180F	18	3	9.34	1.43	6.07	2.57	5.34	8.06	12.3	27.76
Flow (cfs)	Medicine Lodge River	OK621010-03-0010D	14	7	76.8	10.6	39.6	0.4	42.1	89.9	103.9	124.6
Flow (cfs)	Otter Creek: Harper Co.	OK720500-02-0050B	16	3	1.232	0.232	0.929	0.02	0.185	1.355	2.068	2.83
Flow (cfs)	Otter Creek: Logan Co.	OK620910-03-0040C	14	7	15.05	3.78	14.13	1.92	3.34	10.34	26.9	43.73
Flow (cfs)	Palo Duro Creek	OK720500-02-0500G	15	7	0.787	0.151	0.583	0.01	0.42	0.76	0.94	2.04
Flow (cfs)	Persimmon Creek	OK720500-01-0150G	19	2	16.56	2.92	12.74	2.8	9.4	15.39	20.4	62.78
Flow (cfs)	Pond Creek	OK621000-05-0010D	3	18	15.32	3.23	5.6	10.55	10.55	13.92	21.48	21.48
Flow (cfs)	Red Rock Creek: Lower	OK621200-05-0010K	10	11	27.9	12.9	40.7	6.2	9.4	12.9	27.7	141.6
Flow (cfs)	Red Rock Creek: Upper	OK621200-05-0010M	14	7	31	13.9	52.1	3.6	7.3	11	29.5	198.6
Flow (cfs)	Salt Creek: Lower	OK621200-04-0010F	14	6	39.8	14	52.2	6	8.5	20.3	51.3	200.8
Flow (cfs)	Salt Creek: Upper	OK621200-04-0010P	15	4	15.88	2.88	11.15	3.22	5.44	15.88	20.62	40.54
Flow (cfs)	Salt Fork of Arkansas River	OK621010-01-0010D	11	10	205.6	36.9	122.3	63.4	66.7	163.8	311.8	420.9
Flow (cfs)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	19	2	70.2	34.5	150.3	5.3	17.9	24.7	53	674.8
Flow (cfs)	Salt Creek: Payne Co.	OK620900-02-0020D	11	10	10.25	3.94	13.07	0.1	1.43	3.18	16.37	44.57
Flow (cfs)	Sand Creek	OK620920-05-0050J	16	7	1.302	0.732	2.929	0.01	0.175	0.565	0.948	12.14
Flow (cfs)	Sandy Creek	OK621010-02-0010D	10	11	41.78	8.12	25.69	5.34	15.58	43.19	57.83	88.04
Flow (cfs)	Skeleton Creek: Lower	OK620910-03-0010F	3	17	96.1	15.3	26.6	65.4	65.4	110.2	112.6	112.6
Flow (cfs)	Skeleton Creek: Upper	OK620910-03-0010S	14	7	28.63	4.71	17.63	12.43	16.69	21.55	37.85	70.53
Flow (cfs)	Spring Creek	OK720500-02-0100D	17	4	0.7482	0.0838	0.3455	0	0.47	0.71	1.035	1.23
Flow (cfs)	Stillwater Creek: Lower	OK620900-04-0040C	5	15	26.9	14.6	32.7	3.8	7.9	13.6	52.5	84.4
Flow (cfs)	Stillwater Creek: Upper	OK620900-04-0070T	10	13	8.36	2.55	8.06	0.4	0.59	7.79	15.46	21.65
Flow (cfs)	Turkey Creek: Woods Co.	OK621010-01-0230G	16	3	2.332	0.918	3.672	0.1	0.198	0.67	2.475	11.95
Flow (cfs)	Turkey Creek: Lower	OK620910-06-0010B	16	5	30.1	4.47	17.88	7.31	12.67	31.07	44.01	58.07
Flow (cfs)	Turkey Creek: Upper	OK620910-06-0010T	18	3	16.94	3.28	13.93	5.74	9.86	13.92	18.2	68.22
Flow (cfs)	Uncle John's Creek	OK620910-05-0030C	14	7	24.35	5.87	21.97	2.91	10.15	17.37	36.18	78.33
Flow (cfs)	West Clay Creek	OK621010-01-0090R	17	4	2.09	0.859	3.542	0.1	0.31	0.62	1.485	13.17
Flow (cfs)	Wolf Creek: Lower	OK720500-02-0030M	18	3	23.84	6.17	26.17	0.64	5.37	17.04	39.93	109.96
Flow (cfs)	Wolf Creek: Upper	OK720500-03-0010G	18	3	49.1	11.2	47.5	11.3	18.5	37	54	202.1
Flow (cfs)	Yellowstone Creek	OK621010-01-0270C	16	3	3.59	1.12	4.46	0.46	1.09	1.77	3.32	15.44

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrate (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.2889	0.0565	0.2525	0.0141	0.09	0.23	0.4425	0.86
Nitrate (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.2082	0.0413	0.1752	0.0141	0.075	0.165	0.3325	0.7
Nitrate (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.6625	0.0497	0.2225	0.28	0.485	0.655	0.8575	1.11
Nitrate (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	1.023	0.282	1.162	0.014	0.475	0.73	1.365	5.11
Nitrate (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.2945	0.0548	0.2452	0.0141	0.0381	0.26	0.4925	0.87
Nitrate (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.4425	0.0435	0.1945	0.06	0.2825	0.47	0.6475	0.71
Nitrate (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.763	0.0751	0.3359	0.29	0.5575	0.715	0.8775	1.53
Nitrate (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.995	0.13	0.536	0.22	0.585	0.95	1.375	2.1
Nitrate (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.2049	0.0517	0.2314	0.0141	0.0141	0.11	0.3375	0.78
Nitrate (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.309	0.0606	0.271	0.0141	0.0431	0.22	0.6	0.85
Nitrate (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	1.098	0.177	0.731	0.09	0.505	0.79	1.81	2.47
Nitrate (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	1.236	0.171	0.704	0.25	0.695	1	1.905	2.69
Nitrate (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.518	0.172	0.708	0.05	0.14	0.28	0.575	3
Nitrate (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	1.378	0.261	1.167	0.014	0.18	1.26	2.043	3.89
Nitrate (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.685	0.586	2.414	0.014	0.014	0.014	0.23	10.04
Nitrate (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.01773	0.00286	0.0128	0.01414	0.01414	0.01414	0.01414	0.07
Nitrate (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.6145	0.0479	0.2141	0.36	0.385	0.575	0.8275	1
Nitrate (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.933	0.119	0.532	0.34	0.565	0.795	1.128	2.34
Nitrate (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	3.28	0.402	1.799	0.33	1.708	3.24	5.088	6.11
Nitrate (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.153	0.0328	0.1468	0.0141	0.0206	0.135	0.2075	0.55
Nitrate (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.1423	0.0449	0.2008	0.0141	0.0141	0.0141	0.1875	0.78
Nitrate (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	1.0375	0.0611	0.2733	0.55	0.8025	1.065	1.2075	1.65
Nitrate (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	1.151	0.0851	0.3807	0.46	0.93	1.14	1.35	2.01
Nitrate (mg/L)	Deep Creek	OK620910-02-0250C	20	1	1.395	0.122	0.544	0.52	1.023	1.255	1.763	2.68
Nitrate (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.887	0.154	0.635	0.014	0.525	0.67	1.415	2.19
Nitrate (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.1002	0.0246	0.1073	0.0141	0.0141	0.1	0.15	0.42
Nitrate (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.2931	0.0559	0.2501	0.0141	0.09	0.26	0.4825	0.83
Nitrate (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.04678	0.00927	0.04144	0.01414	0.01414	0.01414	0.0875	0.13
Nitrate (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.1919	0.0455	0.2034	0.0141	0.0141	0.2	0.3	0.76
Nitrate (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	2.387	0.237	1.059	0.84	1.648	2.3	2.848	5.05
Nitrate (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1.248	0.137	0.612	0.29	0.753	1.235	1.83	2.36
Nitrate (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.2147	0.0691	0.3089	0.0141	0.0141	0.085	0.285	1.07
Nitrate (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.0904	0.0227	0.0988	0.0141	0.0141	0.04	0.16	0.34
Nitrate (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.1142	0.0259	0.1159	0.0141	0.0141	0.08	0.2075	0.36
Nitrate (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	4.277	0.233	1.044	2.4	3.62	4.135	5.21	5.97
Nitrate (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.3872	0.0451	0.2016	0.0141	0.2175	0.365	0.605	0.71
Nitrate (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	1.274	0.133	0.596	0.39	0.843	1.205	1.663	2.56
Nitrate (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.434	0.0463	0.207	0.13	0.2675	0.405	0.56	0.95
Nitrate (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.4597	0.0551	0.2462	0.0141	0.23	0.48	0.69	0.81
Nitrate (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.0805	0.0289	0.1291	0.0141	0.0141	0.0141	0.095	0.51
Nitrate (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.2499	0.0438	0.1958	0.0141	0.1125	0.21	0.35	0.66
Nitrate (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.3664	0.0446	0.1996	0.0141	0.2025	0.395	0.56	0.67

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrate (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.782	0.108	0.482	0.12	0.515	0.685	0.998	2.18
Nitrate (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.0338	0.0107	0.0454	0.0141	0.0141	0.0141	0.0256	0.19
Nitrate (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.4627	0.0986	0.4411	0.0141	0.1075	0.31	0.7225	1.72
Nitrate (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.02223	0.00585	0.02618	0.01414	0.01414	0.01414	0.01414	0.12
Nitrate (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.6695	0.0629	0.2814	0.13	0.4825	0.6	0.8925	1.23
Nitrate (mg/L)	Pond Creek	OK621000-05-0010D	20	1	1.043	0.134	0.6	0.3	0.8	0.905	1.188	3.26
Nitrate (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.5194	0.0861	0.3849	0.0141	0.28	0.46	0.7625	1.6
Nitrate (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.6019	0.0897	0.401	0.0141	0.34	0.6	0.735	1.54
Nitrate (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.0941	0.0264	0.1149	0.0141	0.0141	0.03	0.13	0.39
Nitrate (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.0511	0.0158	0.0672	0.0141	0.0141	0.0141	0.075	0.23
Nitrate (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.1627	0.0361	0.1612	0.0141	0.0141	0.12	0.2275	0.6
Nitrate (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	1.415	0.202	0.904	0.014	0.673	1.325	2.183	3.12
Nitrate (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.0986	0.03	0.1343	0.0141	0.0141	0.0371	0.13	0.54
Nitrate (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.0934	0.0226	0.1011	0.0141	0.0141	0.075	0.13	0.44
Nitrate (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	1.141	0.116	0.518	0.72	0.885	1	1.208	3.16
Nitrate (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	1.98	0.258	1.154	0.36	1.073	1.84	2.358	4.64
Nitrate (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	3.483	0.355	1.587	1.29	2.17	3.39	4.423	6.54
Nitrate (mg/L)	Spring Creek	OK720500-02-0100D	19	2	1.413	0.116	0.506	0.014	1.1	1.46	1.78	2.12
Nitrate (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	4.86	1.01	4.42	0.29	0.76	3.32	8.99	12.45
Nitrate (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.454	0.103	0.471	0.014	0.135	0.27	0.535	1.76
Nitrate (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.137	0.0247	0.1049	0.0141	0.0635	0.125	0.1775	0.37
Nitrate (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	1.38	0.121	0.539	0.45	0.823	1.485	1.75	2.29
Nitrate (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	1.145	0.113	0.503	0.2	0.815	1.18	1.57	1.94
Nitrate (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	1.59	0.122	0.546	0.76	1.128	1.51	1.958	2.64
Nitrate (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.768	0.139	0.621	0.014	0.048	0.85	1.29	2.07
Nitrate (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.1139	0.0283	0.1266	0.0141	0.0141	0.095	0.14	0.4
Nitrate (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.7485	0.0756	0.338	0.12	0.4775	0.7	1.0275	1.31
Nitrate (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.131	0.108	0.446	0.014	0.014	0.014	0.014	1.86
Nitrite (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.0317	0.0149	0.0667	0.0141	0.0141	0.0141	0.0141	0.31
Nitrite (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.01956	0.00319	0.01353	0.01414	0.01414	0.01414	0.01414	0.06
Nitrite (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.02902	0.00905	0.04049	0.01414	0.01414	0.01414	0.01414	0.17
Nitrite (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.0367	0.0161	0.0722	0.0141	0.0141	0.0141	0.0141	0.3
Nitrite (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.043	0.0229	0.1023	0.0141	0.0141	0.0141	0.0141	0.47
Nitrite (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.0475	0.0264	0.118	0.0141	0.0141	0.0141	0.0141	0.54
Nitrite (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.0446	0.0202	0.0832	0.0141	0.0141	0.0141	0.0141	0.31
Nitrite (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.0354	0.0213	0.0952	0.0141	0.0141	0.0141	0.0141	0.44
Nitrite (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.0367	0.0186	0.083	0.0141	0.0141	0.0141	0.0141	0.38
Nitrite (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	0.0374	0.0233	0.096	0.0141	0.0141	0.0141	0.0141	0.41
Nitrite (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	0.0266	0.00954	0.03935	0.01414	0.01414	0.01414	0.01414	0.17
Nitrite (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.02836	0.00974	0.04018	0.01414	0.01414	0.01414	0.01414	0.14
Nitrite (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrite (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.0251	0.0109	0.0451	0.0141	0.0141	0.0141	0.0141	0.2
Nitrite (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.0449	0.0308	0.1377	0.0141	0.0141	0.0141	0.0141	0.63
Nitrite (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.0364	0.0223	0.0997	0.0141	0.0141	0.0141	0.0141	0.46
Nitrite (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.0542	0.0358	0.1602	0.0141	0.0141	0.0141	0.0141	0.73
Nitrite (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	0.0418	0.0158	0.0708	0.0141	0.0141	0.0141	0.0141	0.28
Nitrite (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.037	0.0159	0.071	0.0141	0.0141	0.0141	0.0141	0.3
Nitrite (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	0.033	0.0154	0.0687	0.0141	0.0141	0.0141	0.0141	0.32
Nitrite (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	0.0597	0.0316	0.1412	0.0141	0.0141	0.0141	0.0141	0.52
Nitrite (mg/L)	Deep Creek	OK620910-02-0250C	20	1	0.0307	0.0139	0.0623	0.0141	0.0141	0.0141	0.0141	0.29
Nitrite (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.0505	0.0222	0.0916	0.0141	0.0141	0.0141	0.0141	0.36
Nitrite (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.02213	0.00554	0.02415	0.01414	0.01414	0.01414	0.01414	0.1
Nitrite (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.02344	0.00929	0.04156	0.01414	0.01414	0.01414	0.01414	0.2
Nitrite (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.0352	0.0203	0.0906	0.0141	0.0141	0.0141	0.0141	0.42
Nitrite (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.0382	0.0169	0.0756	0.0141	0.0141	0.0141	0.0141	0.3
Nitrite (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	0.0363	0.0124	0.0553	0.0141	0.0141	0.0141	0.0141	0.22
Nitrite (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	0.0285	0.0101	0.045	0.0141	0.0141	0.0141	0.0141	0.21
Nitrite (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.02702	0.00729	0.0326	0.01414	0.01414	0.01414	0.01414	0.12
Nitrite (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.01813	0.00399	0.0174	0.01414	0.01414	0.01414	0.01414	0.09
Nitrite (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.0389	0.0248	0.1109	0.0141	0.0141	0.0141	0.0141	0.51
Nitrite (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	0.0367	0.019	0.0849	0.0141	0.0141	0.0141	0.0141	0.39
Nitrite (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.0339	0.0198	0.0885	0.0141	0.0141	0.0141	0.0141	0.41
Nitrite (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	0.0382	0.0223	0.0996	0.0141	0.0141	0.0141	0.0141	0.46
Nitrite (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.0352	0.0147	0.0659	0.0141	0.0141	0.0141	0.0141	0.26
Nitrite (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.0312	0.014	0.0627	0.0141	0.0141	0.0141	0.0141	0.29
Nitrite (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.02723	0.00919	0.04109	0.01414	0.01414	0.01414	0.01414	0.17
Nitrite (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.0359	0.0218	0.0975	0.0141	0.0141	0.0141	0.0141	0.45
Nitrite (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.0374	0.0233	0.1042	0.0141	0.0141	0.0141	0.0141	0.48
Nitrite (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.0367	0.0164	0.0731	0.0141	0.0141	0.0141	0.0141	0.31
Nitrite (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.0415	0.0171	0.0766	0.0141	0.0141	0.0141	0.0141	0.31
Nitrite (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.02902	0.00937	0.0419	0.01414	0.01414	0.01414	0.01414	0.16
Nitrite (mg/L)	Pond Creek	OK621000-05-0010D	20	1	0.02044	0.00629	0.02814	0.01414	0.01414	0.01414	0.01414	0.14
Nitrite (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.0345	0.0126	0.0564	0.0141	0.0141	0.0141	0.0141	0.22
Nitrite (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.0438	0.0161	0.0719	0.0141	0.0141	0.0141	0.0141	0.26
Nitrite (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.0363	0.018	0.0785	0.0141	0.0141	0.0141	0.0141	0.35
Nitrite (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.014142	0	0	0.014142	0.014142	0.014142	0.014142	0.014142
Nitrite (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	0.0955	0.0457	0.2043	0.0141	0.0141	0.0141	0.0141	0.71
Nitrite (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.02473	0.00814	0.0364	0.01414	0.01414	0.01414	0.01414	0.17
Nitrite (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.0384	0.0243	0.1086	0.0141	0.0141	0.0141	0.0141	0.5

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrite (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	0.0335	0.0122	0.0545	0.0141	0.0141	0.0141	0.0141	0.21
Nitrite (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	0.0593	0.0282	0.126	0.0141	0.0141	0.0141	0.0141	0.54
Nitrite (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	0.0655	0.0328	0.1468	0.0141	0.0141	0.0141	0.0141	0.59
Nitrite (mg/L)	Spring Creek	OK720500-02-0100D	19	2	0.01866	0.00452	0.0197	0.01414	0.01414	0.01414	0.01414	0.1
Nitrite (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	0.0443	0.0146	0.0636	0.0141	0.0141	0.0141	0.0141	0.21
Nitrite (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.02307	0.0058	0.02657	0.01414	0.01414	0.01414	0.01414	0.12
Nitrite (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.0337	0.0134	0.057	0.0141	0.0141	0.0141	0.0141	0.2
Nitrite (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	0.0412	0.0238	0.1066	0.0141	0.0141	0.0141	0.0141	0.49
Nitrite (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	0.063	0.0365	0.163	0.0141	0.0141	0.0141	0.0141	0.73
Nitrite (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	0.0399	0.011	0.0493	0.0141	0.0141	0.0141	0.0575	0.17
Nitrite (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.02294	0.00879	0.03932	0.01414	0.01414	0.01414	0.01414	0.19
Nitrite (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.0324	0.0183	0.0818	0.0141	0.0141	0.0141	0.0141	0.38
Nitrite (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.0362	0.0155	0.0695	0.0141	0.0141	0.0141	0.0141	0.28
Nitrite (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.0251	0.0109	0.0451	0.0141	0.0141	0.0141	0.0141	0.2
pH	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	7.968	0.118	0.527	6.32	7.858	8.16	8.27	8.34
pH	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	7.755	0.0823	0.3493	6.93	7.6125	7.83	7.965	8.25
pH	Bent Creek	OK720500-01-0070D	21	0	8.0071	0.0228	0.1047	7.77	7.945	8.02	8.075	8.2
pH	Bitter Creek	OK621100-00-0100G	18	0	7.6778	0.0874	0.3709	7.09	7.455	7.755	7.85	8.67
pH	Black Bear Creek: Lower	OK621200-03-0010D	19	2	7.952	0.108	0.473	7.03	7.53	8	8.34	8.83
pH	Black Bear Creek: Middle	OK621200-03-0010M	19	2	8.0132	0.0747	0.3254	7.31	7.76	8.03	8.29	8.63
pH	Black Bear Creek: Upper	OK621200-03-0010W	18	3	7.9722	0.0834	0.3536	7.15	7.8775	8.075	8.175	8.39
pH	Bois d'Arc Creek	OK621000-03-0010C	18	0	7.7539	0.0738	0.3131	7.08	7.5925	7.78	8.02	8.19
pH	Buffalo Creek: Lower	OK620920-05-0010G	21	0	7.9705	0.0369	0.169	7.62	7.9	7.97	8.075	8.22
pH	Buffalo Creek: Upper	OK620920-05-0010P	21	0	8.0233	0.0592	0.2714	7.48	7.83	8.09	8.205	8.45
pH	Chickaskia River: Lower	OK621100-00-0010B	17	0	7.74	0.131	0.541	6.28	7.405	7.85	8.125	8.53
pH	Chickaskia River: Upper	OK621100-00-0010M	17	0	7.856	0.154	0.634	6.46	7.35	8.03	8.31	8.83
pH	Chilocco Creek	OK621210-00-0270C	18	0	7.785	0.0785	0.3329	7.1	7.635	7.885	8.0425	8.15
pH	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	8.5481	0.0369	0.1692	8.31	8.405	8.52	8.615	8.96
pH	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	7.9272	0.0851	0.3612	7.25	7.6	7.965	8.145	8.7
pH	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	7.9029	0.0604	0.2768	7.41	7.64	8.01	8.145	8.3
pH	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	8.0195	0.0658	0.3017	7.14	7.875	8.02	8.245	8.46
pH	Cooper Creek	OK620910-02-0040C	20	1	8.108	0.0477	0.2134	7.44	8.1125	8.17	8.235	8.36
pH	Cottonwood Creek	OK620910-04-0010D	19	2	8.0042	0.0625	0.2723	7.37	7.88	8.06	8.17	8.52
pH	Council Creek	OK620900-02-0050H	20	2	7.8345	0.0907	0.4056	6.56	7.675	7.9	8.14	8.28
pH	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	8.2929	0.0312	0.1429	7.94	8.195	8.34	8.405	8.46
pH	Crooked Creek: Grant Co.	OK621000-06-0010C	18	3	8.2022	0.044	0.1867	7.87	8.1	8.15	8.2725	8.65
pH	Dead Indian Creek	OK620910-05-0080D	20	1	7.921	0.0372	0.1664	7.52	7.8325	7.955	8.0425	8.18
pH	Deep Creek	OK620910-02-0250C	21	0	7.9448	0.0505	0.2316	7.2	7.84	7.96	8.095	8.27
pH	Deer Creek	OK621000-04-0010D	18	0	7.749	0.121	0.514	6.2	7.62	7.885	8.038	8.3
pH	Doga Creek	OK621200-02-0020C	18	2	7.6744	0.0779	0.3306	6.7	7.5725	7.78	7.865	8.04
pH	Driftwood Creek	OK621010-03-0030C	18	3	8.0489	0.0663	0.2811	7.74	7.88	8.025	8.13	9
pH	Duck Pond Creek	OK720500-02-0250F	21	0	7.9157	0.0714	0.3271	7.05	7.605	8.06	8.155	8.33

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
pH	Dugout Creek	OK620900-03-0080C	20	1	8.047	0.0481	0.215	7.62	7.875	8.06	8.19	8.46
pH	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	8.2367	0.0437	0.2002	7.88	8.16	8.23	8.28	8.95
pH	Eagle Chief Creek: Upper	OK620920-04-0010G	18	3	8.0206	0.0308	0.1307	7.71	7.935	8.025	8.0925	8.27
pH	Euchee Creek	OK620900-01-0290D	19	2	7.5479	0.0851	0.3709	6.36	7.33	7.62	7.78	7.96
pH	Gray Horse Creek	OK621200-01-0400C	17	3	7.6035	0.0927	0.3822	6.53	7.42	7.68	7.875	8.06
pH	Griever Creek	OK620920-01-0130G	21	0	8.01	0.036	0.1651	7.56	7.895	8.06	8.135	8.2
pH	Indian Creek: Major Co.	OK620910-02-0310C	21	0	8.0886	0.0586	0.2687	7.15	7.995	8.17	8.265	8.35
pH	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	8.2186	0.023	0.1052	7.99	8.14	8.23	8.295	8.41
pH	Kingfisher Creek	OK620910-05-0010J	20	1	8.0155	0.0377	0.1688	7.57	7.94	8.085	8.1175	8.21
pH	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	8.2243	0.0437	0.2002	7.72	8.115	8.28	8.355	8.52
pH	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	7.8329	0.0479	0.2194	7.32	7.7	7.86	8.015	8.15
pH	Lagoon Creek	OK620900-01-0180J	19	2	7.6568	0.0921	0.4016	6.62	7.4	7.7	7.93	8.45
pH	Long Creek	OK620920-02-0080D	20	1	7.8885	0.0537	0.24	7.17	7.8	7.995	8.0475	8.13
pH	Main Creek	OK620920-01-0180F	21	0	7.981	0.0258	0.1182	7.63	7.895	8.02	8.075	8.13
pH	Medicine Lodge River	OK621010-03-0010D	18	3	8.119	0.216	0.916	4.5	8.135	8.345	8.445	8.6
pH	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	7.9079	0.0494	0.2154	7.46	7.74	7.9	8.11	8.19
pH	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	8.1885	0.0838	0.3746	7.04	8.03	8.325	8.3975	8.72
pH	Palo Duro Creek	OK720500-02-0500G	21	1	7.8495	0.0522	0.2391	7.23	7.695	7.91	8.025	8.17
pH	Persimmon Creek	OK720500-01-0150G	21	0	8.3495	0.0235	0.1077	8.08	8.29	8.38	8.42	8.52
pH	Pond Creek	OK621000-05-0010D	17	4	7.9394	0.0372	0.1534	7.54	7.89	7.96	8.015	8.24
pH	Red Rock Creek: Lower	OK621200-05-0010K	20	1	7.9305	0.0699	0.3127	7.42	7.6225	7.93	8.205	8.49
pH	Red Rock Creek: Upper	OK621200-05-0010M	20	1	7.9725	0.0633	0.283	7.35	7.83	8.02	8.195	8.4
pH	Salt Creek: Lower	OK621200-04-0010F	18	2	7.8511	0.0672	0.2852	7.19	7.66	7.93	8.0475	8.2
pH	Salt Creek: Upper	OK621200-04-0010P	19	0	7.849	0.101	0.439	7.01	7.62	7.9	8.08	8.87
pH	Salt Fork of Arkansas River	OK621010-01-0010D	17	4	8.4159	0.0515	0.2123	7.95	8.27	8.51	8.59	8.64
pH	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	7.8495	0.0392	0.1795	7.41	7.77	7.92	7.965	8.11
pH	Salt Creek: Payne Co.	OK620900-02-0020D	19	2	7.6926	0.0885	0.3857	6.76	7.5	7.76	8	8.19
pH	Sand Creek	OK620920-05-0050J	23	0	7.7726	0.0607	0.291	7.37	7.45	7.73	8.08	8.18
pH	Sandy Creek	OK621010-02-0010D	19	2	8.1837	0.0385	0.1677	7.68	8.17	8.22	8.27	8.41
pH	Skeleton Creek: Lower	OK620910-03-0010F	19	1	8.109	0.175	0.762	5.33	7.9	8.31	8.57	8.82
pH	Skeleton Creek: Upper	OK620910-03-0010S	21	0	8.2248	0.0484	0.2218	7.79	8.11	8.23	8.39	8.74
pH	Spring Creek	OK720500-02-0100D	21	0	7.959	0.071	0.3252	7.16	7.775	7.99	8.15	8.5
pH	Stillwater Creek: Lower	OK620900-04-0040C	17	3	7.8594	0.0595	0.2453	7.47	7.65	7.87	7.98	8.32
pH	Stillwater Creek: Upper	OK620900-04-0070T	19	4	7.9363	0.0529	0.2304	7.56	7.75	7.96	8.13	8.29
pH	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	7.995	0.0416	0.1764	7.71	7.86	7.98	8.11	8.36
pH	Turkey Creek: Lower	OK620910-06-0010B	20	1	8.133	0.0571	0.2555	7.53	8.03	8.19	8.31	8.57
pH	Turkey Creek: Upper	OK620910-06-0010T	20	1	8.1505	0.0806	0.3605	7.25	7.9825	8.255	8.3625	8.69
pH	Uncle John's Creek	OK620910-05-0030C	20	1	7.986	0.0461	0.2061	7.5	7.8725	8.055	8.1375	8.26
pH	West Clay Creek	OK621010-01-0090R	17	4	7.8765	0.0776	0.32	7	7.67	7.92	8.115	8.29
pH	Wolf Creek: Lower	OK720500-02-0030M	20	1	8.231	0.0591	0.2643	7.58	7.99	8.3	8.465	8.54
pH	Wolf Creek: Upper	OK720500-03-0010G	21	0	8.2314	0.0386	0.177	7.66	8.12	8.3	8.325	8.46
pH	Yellowstone Creek	OK621010-01-0270C	18	1	7.9522	0.0553	0.2346	7.37	7.7675	8.04	8.1275	8.24

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Sulfate (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	60.19	6.68	29.88	5.7	36.45	69.15	85.08	103.6
Sulfate (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	12.367	0.757	3.212	6.3	10.975	12.25	15.025	17.7
Sulfate (mg/L)	Bent Creek	OK720500-01-0070D	20	1	1136.6	53	237	658.9	961.3	1143.4	1290.1	1588.6
Sulfate (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	582.8	64.8	267.3	202.8	270.6	639	788.3	994.9
Sulfate (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	30.3	3.87	17.33	7.1	15.68	26.8	42.4	66.5
Sulfate (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	43.51	5.86	26.23	6.4	20.93	45.6	57.98	98.6
Sulfate (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	49.4	6.17	27.61	5.3	25.15	48.95	70.75	98.5
Sulfate (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	294.2	26.7	110.2	60.7	247.8	295.7	338.8	559.5
Sulfate (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	1574.5	82.5	369	545.5	1374.7	1597.7	1873.5	2180.7
Sulfate (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	1219.7	97	433.7	113.1	1046.7	1289.1	1528	1795.5
Sulfate (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	133.42	9.65	39.78	67.3	110.45	138.9	158.95	216.7
Sulfate (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	90.9	11.4	46.9	27.3	65.7	79.2	107.7	218.5
Sulfate (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	47.71	5.55	22.89	21.9	31.1	39.3	62.4	114.8
Sulfate (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	212.96	8.07	36.09	171	183.43	197.75	239.3	296.9
Sulfate (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	920.6	90.1	371.6	197.6	649.9	957.8	1170.9	1701.5
Sulfate (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	196.2	33.9	151.8	59.9	106.5	121.3	282.7	630.9
Sulfate (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	47.67	3.5	15.66	30.5	34.45	40.1	59.35	88.1
Sulfate (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	605	51.8	231.8	99.6	481.6	597.9	736.4	1011
Sulfate (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	146.1	11.9	53.1	13.7	105.9	160.7	179.6	236.7
Sulfate (mg/L)	Council Creek	OK620900-02-0050H	20	2	25.4	2.31	10.34	10.1	17.35	22.7	34.55	44.7
Sulfate (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	210.11	9.1	40.67	164.3	179.98	191.55	242.85	295.8
Sulfate (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	232.9	29.3	131.2	72.3	125.8	204.7	312.7	590.4
Sulfate (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	687.7	45.1	201.7	244.8	518.4	697.5	854.7	1017
Sulfate (mg/L)	Deep Creek	OK620910-02-0250C	20	1	994.2	76.6	342.7	143.8	872.7	1088.2	1196.2	1601.7
Sulfate (mg/L)	Deer Creek	OK621000-04-0010D	17	1	110.69	9.62	39.67	30	84.95	109.5	139.25	178.4
Sulfate (mg/L)	Doga Creek	OK621200-02-0020C	19	1	25.17	6.42	28	7	13	19.8	23.6	137.6
Sulfate (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	735.9	56.7	253.7	230.1	556.9	681.6	934.9	1349.8
Sulfate (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	64.2	5.16	23.06	26.6	52.9	59.25	68.15	135.5
Sulfate (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	20.14	0.919	4.11	11.3	17.7	19.2	23.6	27.2
Sulfate (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	386	23.5	105.2	243.5	306.2	394	468	673.9
Sulfate (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1068.2	66.6	297.7	514	808.4	1060.3	1297.9	1603.6
Sulfate (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	35.49	3.81	17.04	12.8	23.18	30.05	47.95	78.8
Sulfate (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	33.39	3.2	13.95	13.8	20.4	34	39.8	63.5
Sulfate (mg/L)	Griever Creek	OK620920-01-0130G	20	1	1678	78.7	351.9	923.4	1436.9	1769.3	1909.2	2245.1
Sulfate (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	263.4	14.5	64.9	161.8	188.3	285.2	317.4	345
Sulfate (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	274.73	9.18	41.05	217.4	244.3	260.55	307.58	372.4
Sulfate (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	725.6	43.6	195	409.6	594	700.4	877.4	1102
Sulfate (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	65.24	2.06	9.21	53.7	58.3	62.7	71.88	87.3
Sulfate (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	77.13	3.71	16.61	39.5	69.73	76.8	80.2	120.7
Sulfate (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	23.62	2.51	11.21	5.5	13.45	22.2	33.4	38.5
Sulfate (mg/L)	Long Creek	OK620920-02-0080D	20	1	1478.2	56.3	251.6	1025.4	1304	1426.8	1547.7	2014.2
Sulfate (mg/L)	Main Creek	OK620920-01-0180F	20	1	1661.2	49.7	222.3	1030.4	1591.9	1675.2	1815.2	2008.7

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Sulfate (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	296.4	16	71.5	156.4	261.8	300	335.2	450.7
Sulfate (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	311.5	15.1	64.1	214	268.5	292	350.9	455.4
Sulfate (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	81.68	8.09	36.19	13.8	55.63	88.3	99.95	144.7
Sulfate (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	334.6	13.6	61	237.8	306.5	324.8	366.9	493.9
Sulfate (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	218.6	12.7	56.9	120.1	174.6	224	247.4	362.3
Sulfate (mg/L)	Pond Creek	OK621000-05-0010D	20	1	150.1	19.8	88.6	30.1	98.8	125.2	217.9	423
Sulfate (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	87.6	13.9	62.3	11.4	32.4	72.2	137.5	240.1
Sulfate (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	113.6	14.1	63	20.5	62.9	119.9	161.6	252.5
Sulfate (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	20.89	3.22	14.05	7.4	12	14.8	20.9	55.5
Sulfate (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	12.08	2.24	9.51	5	6.38	9.75	13.15	45.7
Sulfate (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	460.9	36.4	162.7	200.8	378.4	437	516.8	813.2
Sulfate (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	1191.3	48.7	217.7	771.3	1030.5	1188	1374.6	1609.7
Sulfate (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	27.71	3.1	13.87	10.9	16.58	22.8	36.35	57.2
Sulfate (mg/L)	Sand Creek	OK620920-05-0050J	20	3	1937	118	527	214	1864	2014	2244	2616
Sulfate (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	123.7	22.4	100.1	58.7	67.7	82.1	116.3	412.7
Sulfate (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	157.4	13.3	59.5	14	120	173.5	196.5	242.8
Sulfate (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	202	11.1	49.8	97.9	173.5	204.4	226.8	287.7
Sulfate (mg/L)	Spring Creek	OK720500-02-0100D	19	2	31.03	2.52	10.99	22.3	25.1	28.9	30.9	71.4
Sulfate (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	65.05	9.97	43.47	10.6	22.9	63.4	100	159
Sulfate (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	42.68	6.8	31.14	12.3	17.95	28.7	61.45	109.1
Sulfate (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	1956	131	554	907	1580	1924	2302	3206
Sulfate (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	166.2	15	67.3	67.5	126.6	149.7	187	396.7
Sulfate (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	138.1	11.9	53.1	51.2	101.7	140.3	166.2	293.3
Sulfate (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	174.3	13.6	60.9	73.8	115.1	190.1	221.2	282.9
Sulfate (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	1310.8	85.9	384.2	680.4	1178.3	1224.5	1444.4	2518.8
Sulfate (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	161	18.5	82.6	41.4	104	138.8	226.5	337.4
Sulfate (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	109.09	4.16	18.59	48.6	99.08	110.2	119.4	132
Sulfate (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	1714.2	64	264	1187.2	1555.9	1718.9	1896.3	2285.8
Temperature (°C)	Beaver Creek: Logan Co.	OK620900-03-0230C	21	0	17.3	2.11	9.67	2	6.45	19.8	26	30.5
Temperature (°C)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	15.6	2.28	9.67	0.6	6.03	15.8	24.58	29.2
Temperature (°C)	Bent Creek	OK720500-01-0070D	21	0	13.26	1.66	7.6	2.5	6.5	11.1	21.1	24
Temperature (°C)	Bitter Creek	OK621100-00-0100G	18	0	14.88	2.1	8.93	0.5	7.95	13.75	24.25	27.8
Temperature (°C)	Black Bear Creek: Lower	OK621200-03-0010D	21	0	16.73	2.06	9.46	0.3	7	18.4	24.7	31
Temperature (°C)	Black Bear Creek: Middle	OK621200-03-0010M	21	0	15.92	2.07	9.47	0.7	6.85	17.6	24.35	29.7
Temperature (°C)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	15.4	2.06	9.21	0.1	7.23	16.05	23.98	28.2
Temperature (°C)	Bois d'Arc Creek	OK621000-03-0010C	18	0	14.6	2.07	8.79	0	8.45	14.55	23.98	27.1
Temperature (°C)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	14.98	2.01	9.2	0.4	6.45	13.1	24	29.2
Temperature (°C)	Buffalo Creek: Upper	OK620920-05-0010P	21	0	15.65	1.84	8.45	0.1	9.2	15.8	23.2	30.5
Temperature (°C)	Chickaskia River: Lower	OK621100-00-0010B	17	0	14.63	2.14	8.82	0	8.3	14.8	23	28.2
Temperature (°C)	Chickaskia River: Upper	OK621100-00-0010M	17	0	15.22	2.21	9.1	0.6	8.5	14.9	24.1	29.3
Temperature (°C)	Chilocco Creek	OK621210-00-0270C	18	0	14.57	2.17	9.22	0.3	6.98	13.35	24.35	28.1
Temperature (°C)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	20.03	1.9	8.72	6.3	13.45	19	27.1	34

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Temperature (°C)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	12.55	1.99	8.43	2.2	4.23	11	21.88	23.9
Temperature (°C)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	15.72	1.87	8.59	3.2	7.2	14.3	23.9	28.6
Temperature (°C)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	13.61	1.44	6.6	4	7.45	13.7	20.05	24.5
Temperature (°C)	Cooper Creek	OK620910-02-0040C	21	0	15.1	2.11	9.65	0.1	5.25	16.1	23.2	30.7
Temperature (°C)	Cottonwood Creek	OK620910-04-0010D	19	2	17.64	1.95	8.5	2.9	10.6	19.7	24.1	31.3
Temperature (°C)	Council Creek	OK620900-02-0050H	22	0	14.9	1.8	8.42	0.5	7.48	16.3	21.1	26.6
Temperature (°C)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	19.49	1.96	8.96	3.1	13.15	18.8	25.85	34.6
Temperature (°C)	Crooked Creek: Grant Co.	OK621000-06-0010C	21	0	16.86	1.77	8.1	6.3	8.8	15.1	25.9	28.1
Temperature (°C)	Dead Indian Creek	OK620910-05-0080D	21	0	13.89	1.94	8.87	0.1	4.45	15.5	21.5	25.7
Temperature (°C)	Deep Creek	OK620910-02-0250C	21	0	15.16	2.09	9.56	0.1	4.95	15.8	24	28.5
Temperature (°C)	Deer Creek	OK621000-04-0010D	18	0	14.47	2.1	8.9	0.2	7.73	14.3	22.8	28.3
Temperature (°C)	Doga Creek	OK621200-02-0020C	20	0	15.21	2.07	9.26	1.4	5.48	16.1	22.93	28.7
Temperature (°C)	Driftwood Creek	OK621010-03-0030C	21	0	16.3	2.01	9.21	2.4	8.95	12.8	25.25	30.2
Temperature (°C)	Duck Pond Creek	OK720500-02-0250F	21	0	16.34	1.55	7.1	5.8	9.9	15.6	23.3	26.3
Temperature (°C)	Dugout Creek	OK620900-03-0080C	21	0	14.34	1.91	8.75	0.5	5.75	17.7	21.65	27.1
Temperature (°C)	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	16.06	2.08	9.54	0.4	6.25	18	25.05	29.2
Temperature (°C)	Eagle Chief Creek: Upper	OK620920-04-0010G	21	0	18.34	1.99	9.1	5.1	11.1	14.6	27.4	32.4
Temperature (°C)	Euchee Creek	OK620900-01-0290D	21	0	16.75	1.91	8.76	3	8.85	19.2	24.05	29
Temperature (°C)	Gray Horse Creek	OK621200-01-0400C	20	0	15.78	2.14	9.56	2	5.18	17.55	24.43	30
Temperature (°C)	Griever Creek	OK620920-01-0130G	21	0	15.46	2.05	9.38	0.1	7.1	13.5	24.6	28.6
Temperature (°C)	Indian Creek: Major Co.	OK620910-02-0310C	21	0	13.86	1.84	8.42	0.1	4.9	15.7	22.05	24.6
Temperature (°C)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	14.31	2	9.19	1.8	5.5	11.5	23.8	30
Temperature (°C)	Kingfisher Creek	OK620910-05-0010J	21	0	14.76	2.02	9.27	0	5.3	16.3	22.55	26.5
Temperature (°C)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	15.69	1.81	8.3	2.8	8	15	22.45	31.8
Temperature (°C)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	15.08	1.58	7.23	4.7	8.05	14.4	22.8	25.6
Temperature (°C)	Lagoon Creek	OK620900-01-0180J	21	0	16.81	1.93	8.83	2.2	8.6	18.8	23.95	29.6
Temperature (°C)	Long Creek	OK620920-02-0080D	19	2	14.81	2.16	9.42	0.4	4.8	12.1	23.1	30.1
Temperature (°C)	Main Creek	OK620920-01-0180F	21	0	14.92	1.99	9.13	0.1	6	12.4	24.25	26.6
Temperature (°C)	Medicine Lodge River	OK621010-03-0010D	21	0	16	2.13	9.75	1.3	8	13.7	26.45	32.2
Temperature (°C)	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	12.5	2.14	9.35	0.1	4.1	12.9	19.7	32.4
Temperature (°C)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	17.49	2.14	9.55	0.8	9.48	20.05	25.7	30.9
Temperature (°C)	Palo Duro Creek	OK720500-02-0500G	22	0	15.95	1.97	9.25	3.1	6.55	15.3	25.45	28.5
Temperature (°C)	Persimmon Creek	OK720500-01-0150G	21	0	13.81	1.71	7.85	2.9	6.3	11.1	22.2	24.9
Temperature (°C)	Pond Creek	OK621000-05-0010D	21	0	16.79	1.77	8.1	5.7	8.4	15.4	26.05	27.1
Temperature (°C)	Red Rock Creek: Lower	OK621200-05-0010K	21	0	15.87	2.04	9.35	0.4	7	17.5	24.55	29
Temperature (°C)	Red Rock Creek: Upper	OK621200-05-0010M	21	0	15.68	2.09	9.59	0.4	6.85	17.2	24.65	29
Temperature (°C)	Salt Creek: Lower	OK621200-04-0010F	20	0	15.68	2.15	9.61	0.7	6.15	16.95	24.03	29.6
Temperature (°C)	Salt Creek: Upper	OK621200-04-0010P	19	0	17.23	2.33	10.17	2.2	6.5	16	25.9	34.4
Temperature (°C)	Salt Fork of Arkansas River	OK621010-01-0010D	21	0	17.72	1.77	8.1	5.2	11	17.6	25.8	30.7
Temperature (°C)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	13.88	2.04	9.35	0	3.05	14.5	22.85	25
Temperature (°C)	Salt Creek: Payne Co.	OK620900-02-0020D	21	0	15.67	1.9	8.72	1.1	7.25	16.7	23.05	28.9
Temperature (°C)	Sand Creek	OK620920-05-0050J	23	0	15.94	1.7	8.16	0.4	8.1	19.8	23.4	27.1

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Temperature (°C)	Sandy Creek	OK621010-02-0010D	21	0	15.63	1.87	8.59	2.3	8.4	15.2	23.95	30.3
Temperature (°C)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	16.51	2.13	9.51	1.5	6.83	18.6	24.55	30.5
Temperature (°C)	Skeleton Creek: Upper	OK620910-03-0010S	21	0	17.08	2.1	9.64	1.7	7.75	18.4	25.55	29.4
Temperature (°C)	Spring Creek	OK720500-02-0100D	21	0	13.02	1.64	7.54	0.9	6.6	13.4	20.3	25.1
Temperature (°C)	Stillwater Creek: Lower	OK620900-04-0040C	20	0	16.06	2.08	9.31	0.9	6.6	16.6	23.75	30.1
Temperature (°C)	Stillwater Creek: Upper	OK620900-04-0070T	22	1	16.5	2.01	9.45	0.1	6.35	18.25	24.98	29.1
Temperature (°C)	Turkey Creek: Woods Co.	OK621010-01-0230G	19	0	13.96	1.97	8.6	2.1	6.6	11.6	22.6	26.5
Temperature (°C)	Turkey Creek: Lower	OK620910-06-0010B	21	0	14.72	1.95	8.95	0.2	5.7	16.2	22.25	26.8
Temperature (°C)	Turkey Creek: Upper	OK620910-06-0010T	20	1	16.71	2.06	9.21	0.5	7.25	18.6	24.78	29
Temperature (°C)	Uncle John's Creek	OK620910-05-0030C	21	0	13.84	2.05	9.4	0.1	4.25	15.8	22.7	27.4
Temperature (°C)	West Clay Creek	OK621010-01-0090R	21	0	16.77	1.8	8.24	5.8	9.5	14.2	25	29.5
Temperature (°C)	Wolf Creek: Lower	OK720500-02-0030M	20	1	17.61	1.97	8.81	5.5	8.6	16.85	24.83	31
Temperature (°C)	Wolf Creek: Upper	OK720500-03-0010G	21	0	16.08	2.11	9.66	3.3	7.3	13	26.05	30.1
Temperature (°C)	Yellowstone Creek	OK621010-01-0270C	19	0	18.29	2.06	8.99	4.6	11	14.6	27.1	33.1
Total Kjeldahl N (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.726	0.19	0.848	0.18	0.383	0.505	0.685	4.16
Total Kjeldahl N (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.376	0.108	0.459	0.078	0.078	0.18	0.45	1.64
Total Kjeldahl N (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.2543	0.0387	0.1732	0.0778	0.0778	0.245	0.395	0.68
Total Kjeldahl N (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	0.8	0.1	0.414	0.43	0.54	0.72	0.885	2.2
Total Kjeldahl N (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.809	0.123	0.549	0.078	0.408	0.645	1.268	2.06
Total Kjeldahl N (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.774	0.129	0.578	0.078	0.485	0.61	0.8	2.09
Total Kjeldahl N (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.792	0.195	0.87	0.078	0.395	0.5	1.008	4.04
Total Kjeldahl N (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.5776	0.0797	0.3284	0.19	0.355	0.57	0.69	1.65
Total Kjeldahl N (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.4508	0.0855	0.3823	0.0778	0.2725	0.4	0.4875	1.91
Total Kjeldahl N (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.596	0.112	0.502	0.078	0.363	0.52	0.7	2.55
Total Kjeldahl N (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	0.6328	0.0742	0.3059	0.0778	0.4	0.61	0.85	1.24
Total Kjeldahl N (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	0.47	0.123	0.505	0.078	0.145	0.35	0.51	2.06
Total Kjeldahl N (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.475	0.13	0.537	0.078	0.078	0.38	0.56	1.98
Total Kjeldahl N (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	0.792	0.133	0.596	0.23	0.403	0.555	1.145	2.18
Total Kjeldahl N (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.888	0.217	0.895	0.078	0.41	0.62	1.27	3.89
Total Kjeldahl N (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.3294	0.0335	0.1496	0.0778	0.195	0.35	0.45	0.57
Total Kjeldahl N (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.248	0.121	0.54	0.078	0.078	0.078	0.17	2.52
Total Kjeldahl N (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.75	0.0715	0.3197	0.25	0.5225	0.645	1.035	1.52
Total Kjeldahl N (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	0.756	0.133	0.594	0.078	0.458	0.61	0.758	2.19
Total Kjeldahl N (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.479	0.103	0.459	0.078	0.113	0.38	0.588	1.6
Total Kjeldahl N (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.44	0.0854	0.3818	0.15	0.2225	0.295	0.56	1.71
Total Kjeldahl N (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	0.848	0.095	0.425	0.11	0.635	0.755	1.0925	2.07
Total Kjeldahl N (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	0.698	0.112	0.503	0.078	0.41	0.525	0.948	2.2
Total Kjeldahl N (mg/L)	Deep Creek	OK620910-02-0250C	20	1	0.762	0.168	0.751	0.078	0.375	0.525	0.788	3.4
Total Kjeldahl N (mg/L)	Deer Creek	OK621000-04-0010D	17	1	1.044	0.199	0.82	0.25	0.625	0.76	1.2	3.86
Total Kjeldahl N (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.464	0.125	0.543	0.078	0.078	0.28	0.57	1.9
Total Kjeldahl N (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.708	0.0738	0.3299	0.12	0.485	0.67	0.9175	1.5
Total Kjeldahl N (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.344	0.0367	0.1642	0.11	0.175	0.35	0.49	0.62

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Kjeldahl N (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.584	0.122	0.546	0.078	0.333	0.425	0.658	2.6
Total Kjeldahl N (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	0.5427	0.0996	0.4456	0.0778	0.25	0.39	0.8225	1.8
Total Kjeldahl N (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	0.673	0.107	0.48	0.078	0.385	0.525	0.85	2.12
Total Kjeldahl N (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.4179	0.0872	0.39	0.0778	0.0908	0.315	0.5425	1.53
Total Kjeldahl N (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.445	0.109	0.476	0.078	0.078	0.35	0.63	1.85
Total Kjeldahl N (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.554	0.118	0.528	0.078	0.295	0.395	0.575	2.56
Total Kjeldahl N (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	0.546	0.116	0.518	0.078	0.283	0.41	0.585	2.39
Total Kjeldahl N (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.445	0.0506	0.2263	0.13	0.295	0.405	0.57	1.03
Total Kjeldahl N (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	0.731	0.104	0.465	0.23	0.43	0.6	0.8	1.96
Total Kjeldahl N (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.2962	0.0304	0.1358	0.0778	0.2225	0.28	0.3975	0.54
Total Kjeldahl N (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.3918	0.0435	0.1947	0.0778	0.2625	0.4	0.5425	0.74
Total Kjeldahl N (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.41	0.1	0.448	0.078	0.078	0.27	0.535	1.55
Total Kjeldahl N (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.3459	0.0276	0.1233	0.0778	0.255	0.375	0.42	0.61
Total Kjeldahl N (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.3483	0.0498	0.2228	0.0778	0.195	0.32	0.395	0.87
Total Kjeldahl N (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.4137	0.0814	0.3641	0.0778	0.2025	0.335	0.52	1.68
Total Kjeldahl N (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.5683	0.0905	0.384	0.21	0.3675	0.505	0.6275	1.99
Total Kjeldahl N (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.899	0.26	1.162	0.078	0.435	0.53	0.805	5.18
Total Kjeldahl N (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.617	0.101	0.454	0.14	0.305	0.51	0.67	1.98
Total Kjeldahl N (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.4601	0.0976	0.4365	0.0778	0.2025	0.39	0.525	2.01
Total Kjeldahl N (mg/L)	Pond Creek	OK621000-05-0010D	20	1	0.968	0.169	0.755	0.04	0.58	0.755	1.125	3.14
Total Kjeldahl N (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.864	0.122	0.548	0.19	0.523	0.67	1.16	2.16
Total Kjeldahl N (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.8445	0.0974	0.4358	0.24	0.5025	0.755	1.1625	1.7
Total Kjeldahl N (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.2663	0.0804	0.3504	0.0778	0.0778	0.13	0.28	1.5
Total Kjeldahl N (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.2135	0.0452	0.1916	0.0778	0.0778	0.11	0.325	0.67
Total Kjeldahl N (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	1.497	0.116	0.517	0.79	1.043	1.51	1.798	2.75
Total Kjeldahl N (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	0.511	0.114	0.509	0.078	0.223	0.325	0.51	2.01
Total Kjeldahl N (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.4022	0.0778	0.3479	0.0778	0.0778	0.345	0.5675	1.18
Total Kjeldahl N (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.696	0.0633	0.2832	0.12	0.48	0.685	0.94	1.19
Total Kjeldahl N (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	0.3439	0.0555	0.2481	0.0778	0.0958	0.33	0.4575	0.96
Total Kjeldahl N (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	1.212	0.13	0.581	0.51	0.783	1.025	1.52	2.58
Total Kjeldahl N (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	0.968	0.0923	0.4127	0.22	0.67	0.915	1.2625	1.77
Total Kjeldahl N (mg/L)	Spring Creek	OK720500-02-0100D	19	2	0.1744	0.0544	0.2373	0.0778	0.0778	0.0778	0.18	1.1
Total Kjeldahl N (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	0.671	0.103	0.451	0.078	0.25	0.58	0.94	1.68
Total Kjeldahl N (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.3006	0.0566	0.2595	0.0778	0.0778	0.27	0.435	1.04
Total Kjeldahl N (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.5303	0.0924	0.392	0.0778	0.265	0.43	0.6275	1.65
Total Kjeldahl N (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	0.912	0.145	0.65	0.31	0.455	0.835	1.09	2.59
Total Kjeldahl N (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	1.133	0.25	1.118	0.35	0.55	0.815	1.308	5.53
Total Kjeldahl N (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	0.574	0.121	0.541	0.078	0.228	0.44	0.758	2.3
Total Kjeldahl N (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.8244	0.0946	0.4229	0.0778	0.5325	0.645	1.0875	1.62
Total Kjeldahl N (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.6975	0.0421	0.1882	0.23	0.61	0.735	0.8475	0.92
Total Kjeldahl N (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.4161	0.067	0.2996	0.0778	0.1575	0.35	0.655	1.13
Total Kjeldahl N (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.1928	0.0416	0.1716	0.0778	0.0778	0.0778	0.285	0.63

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Nitrogen (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	1.046	0.199	0.889	0.294	0.647	0.754	1.172	4.484
Total Nitrogen (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.604	0.12	0.508	0.106	0.274	0.512	0.699	2.074
Total Nitrogen (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.9459	0.0597	0.2671	0.5419	0.7291	0.9499	1.1606	1.3641
Total Nitrogen (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	1.837	0.32	1.321	0.564	1.029	1.574	2.104	5.974
Total Nitrogen (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	1.141	0.137	0.611	0.408	0.619	1.079	1.687	2.694
Total Nitrogen (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	1.26	0.14	0.626	0.342	0.887	1.117	1.359	2.57
Total Nitrogen (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	1.602	0.212	0.948	0.382	1.002	1.464	1.924	4.98
Total Nitrogen (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	1.617	0.17	0.702	0.664	1.144	1.554	1.879	3.79
Total Nitrogen (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.6912	0.0999	0.4467	0.1061	0.4252	0.6191	0.8956	2.2241
Total Nitrogen (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.942	0.144	0.645	0.106	0.724	0.889	1.102	3.204
Total Nitrogen (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	1.768	0.192	0.79	0.882	1.177	1.644	2.214	3.724
Total Nitrogen (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	1.733	0.214	0.882	0.53	0.969	1.584	2.419	3.924
Total Nitrogen (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	1.022	0.245	1.01	0.232	0.257	0.67	1.124	3.394
Total Nitrogen (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	2.184	0.244	1.092	0.428	1.334	2.189	2.839	4.434
Total Nitrogen (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	1.598	0.599	2.471	0.106	0.513	0.674	1.488	10.424
Total Nitrogen (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.3921	0.0435	0.1944	0.1061	0.2233	0.3983	0.4958	0.93
Total Nitrogen (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.899	0.129	0.578	0.452	0.562	0.809	0.99	3.084
Total Nitrogen (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	1.737	0.141	0.633	0.884	1.279	1.609	2.161	3.154
Total Nitrogen (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	4.078	0.378	1.691	0.944	2.922	3.812	5.639	6.794
Total Nitrogen (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.669	0.115	0.513	0.148	0.317	0.533	0.789	2.164
Total Nitrogen (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.5964	0.0868	0.3882	0.1783	0.2808	0.5091	0.7866	1.7383
Total Nitrogen (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	1.9185	0.0922	0.4125	1.3441	1.5391	1.9091	2.136	2.75
Total Nitrogen (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	1.909	0.123	0.55	1.164	1.527	1.779	2.138	3.224
Total Nitrogen (mg/L)	Deep Creek	OK620910-02-0250C	20	1	2.187	0.179	0.801	1.082	1.634	2.089	2.349	4.564
Total Nitrogen (mg/L)	Deer Creek	OK621000-04-0010D	17	1	1.982	0.243	1	0.888	1.214	1.88	2.254	4.89
Total Nitrogen (mg/L)	Doga Creek	OK621200-02-0020C	18	2	0.603	0.144	0.61	0.106	0.192	0.313	0.799	2.024
Total Nitrogen (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	1.025	0.111	0.495	0.364	0.746	0.874	1.447	2.324
Total Nitrogen (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.426	0.0342	0.153	0.1783	0.2827	0.4083	0.5708	0.69
Total Nitrogen (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.814	0.135	0.604	0.106	0.413	0.631	1.036	2.824
Total Nitrogen (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	2.965	0.208	0.931	1.294	2.326	2.959	3.434	5.434
Total Nitrogen (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1.95	0.118	0.53	1.004	1.434	2.004	2.432	2.66
Total Nitrogen (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.66	0.117	0.525	0.106	0.338	0.501	0.885	1.784
Total Nitrogen (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.553	0.119	0.52	0.106	0.208	0.378	0.884	1.964
Total Nitrogen (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.707	0.13	0.582	0.222	0.416	0.561	0.815	2.904
Total Nitrogen (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	4.86	0.179	0.799	3.452	4.236	4.724	5.454	6.434
Total Nitrogen (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.8661	0.0567	0.2538	0.3183	0.7016	0.9241	1.0566	1.2541
Total Nitrogen (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	2.043	0.143	0.638	0.964	1.487	1.894	2.802	2.974
Total Nitrogen (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.7654	0.0537	0.2404	0.4719	0.5386	0.7541	0.951	1.3541
Total Nitrogen (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.8827	0.0635	0.2842	0.4241	0.6466	0.873	1.0406	1.5641
Total Nitrogen (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.517	0.116	0.517	0.106	0.123	0.391	0.661	2.074
Total Nitrogen (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.6317	0.0492	0.2202	0.2219	0.4941	0.6241	0.7791	1.0541
Total Nitrogen (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.7521	0.0666	0.2978	0.1483	0.5816	0.7841	0.9566	1.32

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Nitrogen (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	1.232	0.129	0.578	0.222	0.878	1.178	1.534	2.484
Total Nitrogen (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.6163	0.0892	0.3784	0.2383	0.4058	0.5612	0.6558	2.0183
Total Nitrogen (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	1.403	0.282	1.259	0.262	0.659	1.029	1.607	5.524
Total Nitrogen (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.653	0.101	0.453	0.168	0.333	0.553	0.698	2.008
Total Nitrogen (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	1.1586	0.093	0.4158	0.4041	0.9494	1.0771	1.3916	2.3041
Total Nitrogen (mg/L)	Pond Creek	OK621000-05-0010D	20	1	2.031	0.198	0.887	0.944	1.329	1.824	2.337	3.924
Total Nitrogen (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	1.418	0.159	0.712	0.684	0.81	1.109	2.099	2.984
Total Nitrogen (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	1.49	0.139	0.62	0.508	1.054	1.392	1.862	3.32
Total Nitrogen (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.3967	0.0994	0.4334	0.1061	0.1819	0.2583	0.4578	1.9041
Total Nitrogen (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.2787	0.0421	0.1786	0.1061	0.1302	0.243	0.3533	0.6983
Total Nitrogen (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	1.674	0.131	0.587	0.904	1.257	1.538	2.074	3.364
Total Nitrogen (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	2.022	0.227	1.014	0.268	1.465	1.842	2.761	3.754
Total Nitrogen (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.5255	0.089	0.398	0.1061	0.2069	0.4141	0.5958	1.4441
Total Nitrogen (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.8279	0.0737	0.3296	0.1483	0.5802	0.8412	1.0566	1.4841
Total Nitrogen (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	1.518	0.132	0.592	0.812	1.208	1.376	1.639	3.504
Total Nitrogen (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	3.251	0.212	0.949	1.464	2.602	3.172	3.833	5.484
Total Nitrogen (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	4.516	0.32	1.431	2.724	3.352	4.384	5.836	7.364
Total Nitrogen (mg/L)	Spring Creek	OK720500-02-0100D	19	2	1.606	0.13	0.565	0.106	1.234	1.674	1.974	2.544
Total Nitrogen (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	5.58	1.04	4.55	0.85	1.31	3.48	9.79	13.49
Total Nitrogen (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.777	0.111	0.507	0.212	0.476	0.55	1.009	2.274
Total Nitrogen (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.701	0.101	0.431	0.106	0.392	0.664	0.811	2.034
Total Nitrogen (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	2.333	0.151	0.674	1.244	1.739	2.354	2.564	4.054
Total Nitrogen (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	2.341	0.268	1.197	0.944	1.779	2.249	2.529	6.934
Total Nitrogen (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	2.203	0.121	0.539	1.092	1.913	2.117	2.621	3.464
Total Nitrogen (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	1.615	0.167	0.749	0.106	1.017	1.879	2.201	2.654
Total Nitrogen (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.8438	0.0408	0.1825	0.3283	0.7608	0.8812	0.9791	1.0741
Total Nitrogen (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	1.2008	0.0804	0.3594	0.4419	1.0441	1.238	1.4406	1.8941
Total Nitrogen (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.349	0.108	0.447	0.106	0.106	0.238	0.363	1.952
Total Ortho Phosphorus (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.0779	0.0331	0.1479	0.0035	0.0115	0.019	0.059	0.548
Total Ortho Phosphorus (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.02484	0.00794	0.0337	0.00354	0.00675	0.015	0.024	0.139
Total Ortho Phosphorus (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.0863	0.0107	0.0479	0.011	0.0463	0.079	0.121	0.177
Total Ortho Phosphorus (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	0.0791	0.0104	0.043	0.02	0.036	0.08	0.1185	0.146
Total Ortho Phosphorus (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.1179	0.0243	0.1088	0.015	0.0315	0.0825	0.1735	0.456
Total Ortho Phosphorus (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.1358	0.0216	0.0964	0.016	0.0595	0.1115	0.2253	0.317
Total Ortho Phosphorus (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.1991	0.0338	0.151	0.065	0.1063	0.1535	0.2533	0.762
Total Ortho Phosphorus (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.0784	0.0117	0.0483	0.027	0.04	0.075	0.098	0.204
Total Ortho Phosphorus (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.0187	0.0106	0.0475	0.0035	0.006	0.007	0.01	0.22
Total Ortho Phosphorus (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.0379	0.0284	0.127	0.0035	0.006	0.008	0.015	0.577
Total Ortho Phosphorus (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	0.1151	0.0243	0.1001	0.013	0.036	0.08	0.18	0.333
Total Ortho Phosphorus (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	0.1152	0.0232	0.0955	0.016	0.0475	0.078	0.161	0.352
Total Ortho Phosphorus (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.0706	0.0109	0.0448	0.009	0.031	0.076	0.108	0.15
Total Ortho Phosphorus (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	0.3977	0.0694	0.3102	0.041	0.1725	0.3085	0.6383	1.007

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Ortho Phosphorus (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.01747	0.0038	0.01568	0.005	0.0085	0.012	0.023	0.072
Total Ortho Phosphorus (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.00768	0.00125	0.00557	0.00354	0.0039	0.006	0.00775	0.022
Total Ortho Phosphorus (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.0099	0.00172	0.00767	0.00354	0.006	0.0075	0.01275	0.039
Total Ortho Phosphorus (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.1442	0.0402	0.1799	0.011	0.0175	0.079	0.196	0.745
Total Ortho Phosphorus (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	0.862	0.0949	0.4242	0.291	0.5508	0.885	1.1643	1.755
Total Ortho Phosphorus (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.03073	0.00988	0.04418	0.00354	0.008	0.011	0.0405	0.176
Total Ortho Phosphorus (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.02443	0.00862	0.03854	0.00354	0.00925	0.012	0.02575	0.181
Total Ortho Phosphorus (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	0.1377	0.0297	0.1326	0.01	0.0373	0.1025	0.239	0.522
Total Ortho Phosphorus (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	0.1503	0.0322	0.144	0.014	0.0538	0.0995	0.2213	0.542
Total Ortho Phosphorus (mg/L)	Deep Creek	OK620910-02-0250C	20	1	0.1077	0.0481	0.2149	0.0035	0.0103	0.0165	0.0868	0.743
Total Ortho Phosphorus (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.1244	0.0469	0.1934	0.013	0.0195	0.057	0.141	0.815
Total Ortho Phosphorus (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.0395	0.00828	0.0361	0.00354	0.012	0.026	0.06	0.138
Total Ortho Phosphorus (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.0941	0.0245	0.1095	0.012	0.026	0.0485	0.136	0.434
Total Ortho Phosphorus (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.0199	0.00677	0.0303	0.007	0.00925	0.013	0.01775	0.147
Total Ortho Phosphorus (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.03098	0.00574	0.02568	0.00354	0.01225	0.022	0.04375	0.1
Total Ortho Phosphorus (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	0.0419	0.0126	0.0565	0.006	0.0083	0.014	0.051	0.226
Total Ortho Phosphorus (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	0.0476	0.0231	0.1033	0.006	0.008	0.012	0.0193	0.457
Total Ortho Phosphorus (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.0837	0.0151	0.0676	0.017	0.0553	0.0625	0.1028	0.326
Total Ortho Phosphorus (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.02592	0.00508	0.02214	0.00354	0.011	0.019	0.031	0.096
Total Ortho Phosphorus (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.0574	0.0341	0.1526	0.0035	0.0035	0.006	0.0103	0.522
Total Ortho Phosphorus (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	0.1105	0.0253	0.1133	0.011	0.0438	0.081	0.1338	0.478
Total Ortho Phosphorus (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.02015	0.00308	0.01378	0.005	0.01025	0.0155	0.0285	0.052
Total Ortho Phosphorus (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	0.1001	0.0256	0.1144	0.013	0.0248	0.0565	0.1653	0.495
Total Ortho Phosphorus (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.0249	0.0065	0.02908	0.00354	0.00625	0.0125	0.03125	0.09
Total Ortho Phosphorus (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.02668	0.00838	0.0375	0.00354	0.007	0.0115	0.02425	0.135
Total Ortho Phosphorus (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.02385	0.00712	0.03185	0.00354	0.00625	0.013	0.03275	0.145
Total Ortho Phosphorus (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.01118	0.00159	0.00711	0.00354	0.006	0.0085	0.0155	0.027
Total Ortho Phosphorus (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.0443	0.0305	0.1364	0.0035	0.006	0.008	0.015	0.621
Total Ortho Phosphorus (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.073	0.0175	0.0781	0.016	0.0263	0.0435	0.097	0.312
Total Ortho Phosphorus (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.021	0.00647	0.02746	0.006	0.00875	0.012	0.02	0.124
Total Ortho Phosphorus (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.1249	0.046	0.2059	0.012	0.0255	0.047	0.098	0.847
Total Ortho Phosphorus (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.01219	0.00517	0.02313	0.00354	0.00354	0.007	0.00975	0.109
Total Ortho Phosphorus (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.0898	0.0121	0.0543	0.025	0.0403	0.0775	0.134	0.198
Total Ortho Phosphorus (mg/L)	Pond Creek	OK621000-05-0010D	20	1	0.1945	0.03	0.134	0.016	0.0965	0.1665	0.3088	0.491
Total Ortho Phosphorus (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.1832	0.0214	0.0956	0.02	0.1068	0.198	0.2458	0.373
Total Ortho Phosphorus (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.181	0.0269	0.1202	0.019	0.0705	0.1735	0.2378	0.504
Total Ortho Phosphorus (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.02337	0.00653	0.02846	0.006	0.009	0.013	0.018	0.109
Total Ortho Phosphorus (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.01992	0.00538	0.02282	0.00354	0.00875	0.013	0.022	0.103
Total Ortho Phosphorus (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.06	0.0122	0.0546	0.0035	0.023	0.0415	0.079	0.235
Total Ortho Phosphorus (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	0.0676	0.029	0.1297	0.0035	0.0065	0.011	0.0405	0.459
Total Ortho Phosphorus (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.03048	0.00858	0.03837	0.00354	0.01	0.014	0.028	0.126
Total Ortho Phosphorus (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.036	0.0113	0.0505	0.005	0.008	0.0185	0.0495	0.227

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Ortho Phosphorus (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	0.0839	0.0136	0.061	0.01	0.0328	0.0715	0.0998	0.22
Total Ortho Phosphorus (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	0.3111	0.0607	0.2713	0.01	0.1523	0.24	0.3918	1.141
Total Ortho Phosphorus (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	0.4779	0.0664	0.2968	0.167	0.2903	0.343	0.7098	1.133
Total Ortho Phosphorus (mg/L)	Spring Creek	OK720500-02-0100D	19	2	0.01104	0.00221	0.00965	0.00354	0.00354	0.007	0.016	0.036
Total Ortho Phosphorus (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	0.733	0.147	0.642	0.034	0.136	0.4	1.327	1.856
Total Ortho Phosphorus (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.03207	0.00723	0.03311	0.00354	0.0155	0.026	0.035	0.164
Total Ortho Phosphorus (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.056	0.0275	0.1167	0.005	0.009	0.0195	0.0448	0.51
Total Ortho Phosphorus (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	0.2384	0.0456	0.2039	0.018	0.0655	0.193	0.348	0.811
Total Ortho Phosphorus (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	0.3012	0.0577	0.2582	0.015	0.0718	0.2545	0.476	1.002
Total Ortho Phosphorus (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	0.1977	0.0386	0.1726	0.04	0.0615	0.1305	0.2938	0.631
Total Ortho Phosphorus (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.0874	0.0182	0.0812	0.018	0.0273	0.058	0.1215	0.339
Total Ortho Phosphorus (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.02955	0.00746	0.03338	0.005	0.012	0.0165	0.02875	0.146
Total Ortho Phosphorus (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.02258	0.00959	0.04289	0.00354	0.00625	0.0105	0.0195	0.2
Total Ortho Phosphorus (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.006863	0.000863	0.003559	0.003536	0.003536	0.006	0.008	0.017
Total Phosphorus (mg/L)	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	0.2452	0.0874	0.3911	0.018	0.0473	0.0935	0.1873	1.474
Total Phosphorus (mg/L)	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	0.0866	0.0221	0.0938	0.022	0.0388	0.054	0.093	0.405
Total Phosphorus (mg/L)	Bent Creek	OK720500-01-0070D	20	1	0.1173	0.0127	0.0566	0.037	0.0683	0.1025	0.1613	0.215
Total Phosphorus (mg/L)	Bitter Creek	OK621100-00-0100G	17	1	0.164	0.0272	0.1123	0.064	0.0965	0.125	0.2025	0.528
Total Phosphorus (mg/L)	Black Bear Creek: Lower	OK621200-03-0010D	20	1	0.2747	0.0576	0.2578	0.063	0.11	0.158	0.3478	1.009
Total Phosphorus (mg/L)	Black Bear Creek: Middle	OK621200-03-0010M	20	1	0.2858	0.052	0.2324	0.074	0.1298	0.1735	0.402	0.858
Total Phosphorus (mg/L)	Black Bear Creek: Upper	OK621200-03-0010W	20	1	0.3496	0.099	0.4425	0.082	0.1575	0.2155	0.366	2.162
Total Phosphorus (mg/L)	Bois d'Arc Creek	OK621000-03-0010C	17	1	0.1485	0.029	0.1198	0.053	0.0915	0.117	0.152	0.581
Total Phosphorus (mg/L)	Buffalo Creek: Lower	OK620920-05-0010G	20	1	0.0458	0.0199	0.0888	0.0035	0.017	0.026	0.039	0.419
Total Phosphorus (mg/L)	Buffalo Creek: Upper	OK620920-05-0010P	20	1	0.0787	0.0478	0.2138	0.0035	0.0233	0.029	0.045	0.985
Total Phosphorus (mg/L)	Chickaskia River: Lower	OK621100-00-0010B	17	0	0.2102	0.037	0.1526	0.087	0.106	0.145	0.2375	0.545
Total Phosphorus (mg/L)	Chickaskia River: Upper	OK621100-00-0010M	17	0	0.2092	0.0443	0.1826	0.077	0.104	0.153	0.213	0.767
Total Phosphorus (mg/L)	Chilocco Creek	OK621210-00-0270C	17	1	0.1453	0.0247	0.1017	0.02	0.0785	0.126	0.1875	0.451
Total Phosphorus (mg/L)	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	0.4915	0.0604	0.2702	0.173	0.2478	0.4335	0.6855	1.018
Total Phosphorus (mg/L)	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	0.0776	0.0108	0.0447	0.016	0.0425	0.064	0.1125	0.176
Total Phosphorus (mg/L)	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	0.02298	0.004	0.01788	0.00354	0.013	0.018	0.0245	0.086
Total Phosphorus (mg/L)	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	0.04235	0.00994	0.04446	0.007	0.0195	0.026	0.04	0.185
Total Phosphorus (mg/L)	Cooper Creek	OK620910-02-0040C	20	1	0.2233	0.0548	0.2449	0.038	0.0618	0.137	0.2783	1.073
Total Phosphorus (mg/L)	Cottonwood Creek	OK620910-04-0010D	20	1	0.9768	0.0844	0.3775	0.35	0.6258	0.979	1.2608	1.554
Total Phosphorus (mg/L)	Council Creek	OK620900-02-0050H	20	2	0.099	0.0284	0.1271	0.021	0.036	0.0455	0.1098	0.52
Total Phosphorus (mg/L)	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	0.0649	0.0182	0.0812	0.017	0.021	0.0365	0.0835	0.376
Total Phosphorus (mg/L)	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	0.2131	0.0294	0.1315	0.044	0.1028	0.187	0.3158	0.549
Total Phosphorus (mg/L)	Dead Indian Creek	OK620910-05-0080D	20	1	0.2224	0.0516	0.2308	0.023	0.0815	0.1745	0.2745	1.002
Total Phosphorus (mg/L)	Deep Creek	OK620910-02-0250C	20	1	0.1999	0.0759	0.3395	0.013	0.043	0.0655	0.1898	1.377
Total Phosphorus (mg/L)	Deer Creek	OK621000-04-0010D	17	1	0.2658	0.0924	0.3811	0.04	0.093	0.134	0.2735	1.667
Total Phosphorus (mg/L)	Doga Creek	OK621200-02-0020C	19	1	0.1129	0.0232	0.1011	0.024	0.05	0.066	0.132	0.367
Total Phosphorus (mg/L)	Driftwood Creek	OK621010-03-0030C	20	1	0.1847	0.0381	0.1706	0.031	0.0648	0.1305	0.2498	0.76
Total Phosphorus (mg/L)	Duck Pond Creek	OK720500-02-0250F	20	1	0.0515	0.00966	0.04319	0.021	0.02425	0.04	0.05975	0.207

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Phosphorus (mg/L)	Dugout Creek	OK620900-03-0080C	20	1	0.0939	0.0198	0.0884	0.018	0.0338	0.047	0.1458	0.356
Total Phosphorus (mg/L)	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	0.1183	0.0242	0.1081	0.027	0.046	0.0715	0.1995	0.425
Total Phosphorus (mg/L)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	0.1163	0.0371	0.1657	0.028	0.0385	0.0555	0.1008	0.706
Total Phosphorus (mg/L)	Euchee Creek	OK620900-01-0290D	20	1	0.1626	0.0188	0.0841	0.048	0.103	0.1415	0.2055	0.364
Total Phosphorus (mg/L)	Gray Horse Creek	OK621200-01-0400C	19	1	0.0982	0.0209	0.0909	0.034	0.053	0.068	0.088	0.405
Total Phosphorus (mg/L)	Griever Creek	OK620920-01-0130G	20	1	0.1078	0.0572	0.256	0.006	0.015	0.0215	0.0413	0.956
Total Phosphorus (mg/L)	Indian Creek: Major Co.	OK620910-02-0310C	20	1	0.1803	0.0467	0.2088	0.029	0.0723	0.135	0.1813	0.903
Total Phosphorus (mg/L)	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	0.0489	0.0053	0.02371	0.005	0.03175	0.043	0.071	0.086
Total Phosphorus (mg/L)	Kingfisher Creek	OK620910-05-0010J	20	1	0.175	0.0394	0.1764	0.023	0.0565	0.1255	0.2403	0.78
Total Phosphorus (mg/L)	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	0.05615	0.00957	0.0428	0.019	0.02425	0.0345	0.08475	0.141
Total Phosphorus (mg/L)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	0.0608	0.0111	0.0496	0.019	0.028	0.0405	0.0758	0.196
Total Phosphorus (mg/L)	Lagoon Creek	OK620900-01-0180J	20	1	0.0796	0.0218	0.0973	0.014	0.031	0.0475	0.1058	0.461
Total Phosphorus (mg/L)	Long Creek	OK620920-02-0080D	20	1	0.0313	0.00381	0.01704	0.014	0.018	0.027	0.045	0.078
Total Phosphorus (mg/L)	Main Creek	OK620920-01-0180F	20	1	0.0833	0.046	0.2059	0.01	0.022	0.03	0.0545	0.952
Total Phosphorus (mg/L)	Medicine Lodge River	OK621010-03-0010D	20	1	0.1521	0.0386	0.1728	0.028	0.057	0.088	0.1895	0.778
Total Phosphorus (mg/L)	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	0.0534	0.0103	0.0437	0.019	0.0273	0.038	0.0633	0.201
Total Phosphorus (mg/L)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	0.339	0.147	0.656	0.043	0.073	0.106	0.188	2.383
Total Phosphorus (mg/L)	Palo Duro Creek	OK720500-02-0500G	20	2	0.047	0.0159	0.0712	0.009	0.0165	0.0235	0.0395	0.33
Total Phosphorus (mg/L)	Persimmon Creek	OK720500-01-0150G	20	1	0.1493	0.0178	0.0796	0.05	0.0793	0.137	0.2108	0.357
Total Phosphorus (mg/L)	Pond Creek	OK621000-05-0010D	20	1	0.2875	0.0419	0.1874	0.046	0.1443	0.25	0.3878	0.752
Total Phosphorus (mg/L)	Red Rock Creek: Lower	OK621200-05-0010K	20	1	0.3236	0.042	0.188	0.061	0.1985	0.259	0.3968	0.757
Total Phosphorus (mg/L)	Red Rock Creek: Upper	OK621200-05-0010M	20	1	0.2917	0.044	0.1966	0.043	0.1718	0.262	0.3368	0.892
Total Phosphorus (mg/L)	Salt Creek: Lower	OK621200-04-0010F	19	1	0.0724	0.018	0.0785	0.024	0.035	0.051	0.066	0.331
Total Phosphorus (mg/L)	Salt Creek: Upper	OK621200-04-0010P	18	1	0.06147	0.00946	0.04013	0.00354	0.04075	0.05	0.07775	0.188
Total Phosphorus (mg/L)	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	0.248	0.0273	0.1221	0.105	0.1623	0.2335	0.286	0.667
Total Phosphorus (mg/L)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	0.1342	0.0514	0.2297	0.017	0.0278	0.0415	0.0795	0.931
Total Phosphorus (mg/L)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	0.0821	0.0184	0.0824	0.017	0.0375	0.05	0.0738	0.298
Total Phosphorus (mg/L)	Sand Creek	OK620920-05-0050J	20	3	0.079	0.0188	0.0839	0.011	0.0223	0.0485	0.1095	0.373
Total Phosphorus (mg/L)	Sandy Creek	OK621010-02-0010D	20	1	0.1311	0.0182	0.0814	0.01	0.067	0.111	0.1675	0.315
Total Phosphorus (mg/L)	Skeleton Creek: Lower	OK620910-03-0010F	20	0	0.511	0.102	0.456	0.191	0.223	0.376	0.599	2.196
Total Phosphorus (mg/L)	Skeleton Creek: Upper	OK620910-03-0010S	20	1	0.5698	0.0652	0.2915	0.244	0.3683	0.446	0.7728	1.126
Total Phosphorus (mg/L)	Spring Creek	OK720500-02-0100D	19	2	0.03121	0.00676	0.02946	0.009	0.016	0.023	0.031	0.139
Total Phosphorus (mg/L)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	0.89	0.155	0.677	0.141	0.251	0.747	1.352	2.382
Total Phosphorus (mg/L)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	0.0943	0.014	0.0641	0.029	0.0445	0.078	0.1135	0.231
Total Phosphorus (mg/L)	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	0.1083	0.0389	0.1651	0.011	0.0213	0.054	0.0993	0.66
Total Phosphorus (mg/L)	Turkey Creek: Lower	OK620910-06-0010B	20	1	0.3647	0.0739	0.3307	0.072	0.1195	0.267	0.4183	1.337
Total Phosphorus (mg/L)	Turkey Creek: Upper	OK620910-06-0010T	20	1	0.4146	0.0844	0.3772	0.056	0.1688	0.3185	0.5703	1.705
Total Phosphorus (mg/L)	Uncle John's Creek	OK620910-05-0030C	20	1	0.2919	0.057	0.2549	0.041	0.0915	0.223	0.4363	1.046
Total Phosphorus (mg/L)	West Clay Creek	OK621010-01-0090R	20	1	0.1519	0.0186	0.083	0.031	0.0838	0.137	0.217	0.349
Total Phosphorus (mg/L)	Wolf Creek: Lower	OK720500-02-0030M	20	1	0.08675	0.00714	0.03195	0.045	0.06525	0.0785	0.10525	0.177
Total Phosphorus (mg/L)	Wolf Creek: Upper	OK720500-03-0010G	20	1	0.0593	0.0134	0.0599	0.014	0.029	0.039	0.071	0.288
Total Phosphorus (mg/L)	Yellowstone Creek	OK621010-01-0270C	17	2	0.0205	0.00292	0.01203	0.00354	0.013	0.017	0.0265	0.056

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Suspended	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	456	290	1297	7	7	14	68	4722
Total Suspended	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	66.6	36	152.6	7.1	7.1	17	31.8	622
Total Suspended	Bent Creek	OK720500-01-0070D	20	1	16.5	4.91	21.98	7.07	7.07	7.07	10	88
Total Suspended	Bitter Creek	OK621100-00-0100G	17	1	55.5	18.9	77.8	7.1	10	19	75.5	263
Total Suspended	Black Bear Creek: Lower	OK621200-03-0010D	20	1	442	186	834	7	9	26	520	3040
Total Suspended	Black Bear Creek: Middle	OK621200-03-0010M	20	1	338	139	622	7	14	28	305	2404
Total Suspended	Black Bear Creek: Upper	OK621200-03-0010W	20	1	445	343	1536	7	10	28	194	6932
Total Suspended	Bois d'Arc Creek	OK621000-03-0010C	17	1	56.1	18.5	76.2	7.1	14.5	33	81	323
Total Suspended	Buffalo Creek: Lower	OK620920-05-0010G	20	1	21.2	12.6	56.5	7.1	7.1	7.1	11.5	261
Total Suspended	Buffalo Creek: Upper	OK620920-05-0010P	20	1	40.2	31.1	139.1	7.1	7.1	7.1	10	631
Total Suspended	Chickaskia River: Lower	OK621100-00-0010B	17	0	148.8	46	189.5	12	25.5	49	291.5	571
Total Suspended	Chickaskia River: Upper	OK621100-00-0010M	17	0	137.5	62.9	259.4	7.1	19.5	32	131.5	1066
Total Suspended	Chilocco Creek	OK621210-00-0270C	17	1	33.67	6.7	27.62	7.07	7.07	18	62.5	82
Total Suspended	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	70.7	31.9	142.6	7.1	16.3	29.5	61	654
Total Suspended	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	14.1	3	12.36	7.07	7.07	7.07	15	51
Total Suspended	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	7.0711	0	0	7.0711	7.0711	7.0711	7.0711	7.0711
Total Suspended	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	9.51	1.49	6.68	7.07	7.07	7.07	7.07	34
Total Suspended	Cooper Creek	OK620910-02-0040C	20	1	74.6	28.7	128.2	7.1	8.1	20	66	510
Total Suspended	Cottonwood Creek	OK620910-04-0010D	20	1	293	122	546	7	12	42	194	2047
Total Suspended	Council Creek	OK620900-02-0050H	20	2	99.3	58.1	259.7	7.1	7.1	7.1	21.3	1060
Total Suspended	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	16.19	4.05	18.12	7.07	7.07	7.07	19.75	84
Total Suspended	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	33.77	5.86	26.22	7.07	8.3	31.5	47.25	104
Total Suspended	Dead Indian Creek	OK620910-05-0080D	20	1	70.8	39.6	177.1	7.1	7.1	10	50	800
Total Suspended	Deep Creek	OK620910-02-0250C	20	1	113.5	70.2	313.8	7.1	11	17	41	1403
Total Suspended	Deer Creek	OK621000-04-0010D	17	1	257	158	653	7	12	42	86	2655
Total Suspended	Doga Creek	OK621200-02-0020C	19	1	69.4	39.7	172.9	7.1	7.1	7.1	29	725
Total Suspended	Driftwood Creek	OK621010-03-0030C	20	1	68.5	16.6	74.1	7.1	20.3	42	77.5	277
Total Suspended	Duck Pond Creek	OK720500-02-0250F	20	1	9.153	0.882	3.943	7.071	7.071	7.071	10.768	20
Total Suspended	Dugout Creek	OK620900-03-0080C	20	1	65	36.8	164.5	7.1	7.1	16.5	53.8	752
Total Suspended	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	113.1	60.8	272.1	7.1	14.5	28.5	101.8	1235
Total Suspended	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	88.3	45.3	202.6	7.1	13.3	20	43.8	870
Total Suspended	Euchee Creek	OK620900-01-0290D	20	1	66.7	36.5	163.2	7.1	7.8	22	40.3	734
Total Suspended	Gray Horse Creek	OK621200-01-0400C	19	1	63.5	33.9	147.6	7.1	7.1	11	29	620
Total Suspended	Griever Creek	OK620920-01-0130G	20	1	113.3	71.3	318.7	7.1	7.1	7.1	15	1146
Total Suspended	Indian Creek: Major Co.	OK620910-02-0310C	20	1	55.2	28.7	128.2	7.1	7.1	12	24	436
Total Suspended	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	23.06	3.11	13.9	7.07	10.5	21	37.25	46
Total Suspended	Kingfisher Creek	OK620910-05-0010J	20	1	119.8	59.4	265.7	7.1	16	40.5	95	1200
Total Suspended	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	21.09	4.66	20.85	7.07	7.07	9.04	31	83
Total Suspended	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	14.69	2.8	12.53	7.07	7.07	7.07	19.25	50
Total Suspended	Lagoon Creek	OK620900-01-0180J	20	1	47.6	30.4	136.1	7.1	7.1	7.1	32	621
Total Suspended	Long Creek	OK620920-02-0080D	20	1	16.18	2.58	11.52	7.07	7.07	11.5	26.5	45
Total Suspended	Main Creek	OK620920-01-0180F	20	1	79.5	54.6	244.3	7.1	8.1	20	36.8	1114

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total Suspended	Medicine Lodge River	OK621010-03-0010D	20	1	86.8	32.6	146	7.1	17.3	35.5	101.8	659
Total Suspended	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	9.12	1.6	6.79	7.07	7.07	7.07	7.07	35
Total Suspended	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	713	472	2111	7	7	13	39	7600
Total Suspended	Palo Duro Creek	OK720500-02-0500G	20	2	11.16	3.6	16.12	7.07	7.07	7.07	7.07	79
Total Suspended	Persimmon Creek	OK720500-01-0150G	20	1	55.8	12.6	56.4	7.1	18.8	41	61.8	252
Total Suspended	Pond Creek	OK621000-05-0010D	20	1	79.6	19.4	86.7	7.1	9.3	63	97.5	340
Total Suspended	Red Rock Creek: Lower	OK621200-05-0010K	20	1	204.3	64.5	288.3	7.1	18.8	60	329.5	1008
Total Suspended	Red Rock Creek: Upper	OK621200-05-0010M	20	1	153.5	55.1	246.4	7.1	7.8	45.5	264.3	1051
Total Suspended	Salt Creek: Lower	OK621200-04-0010F	19	1	54.7	23.4	101.9	7.1	7.1	7.1	39	362
Total Suspended	Salt Creek: Upper	OK621200-04-0010P	18	1	11.43	1.8	7.65	7.07	7.07	7.07	13.5	33
Total Suspended	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	112.8	23.7	105.8	7.1	40	82	165.5	488
Total Suspended	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	127.2	67	299.6	7.1	12	17.5	25.5	1217
Total Suspended	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	55.1	24.9	111.3	7.1	7.1	12.5	19.5	406
Total Suspended	Sand Creek	OK620920-05-0050J	20	3	27.43	8.54	38.17	7.07	7.07	14.5	27.5	168
Total Suspended	Sandy Creek	OK621010-02-0010D	20	1	36.01	7.54	33.72	7.07	11	15.5	70.75	101
Total Suspended	Skeleton Creek: Lower	OK620910-03-0010F	20	0	537	347	1550	7	19	51	224	6857
Total Suspended	Skeleton Creek: Upper	OK620910-03-0010S	20	1	111.8	33.7	150.9	7.1	23.5	61	110.8	623
Total Suspended	Spring Creek	OK720500-02-0100D	19	2	11.38	3.99	17.4	7.07	7.07	7.07	7.07	83
Total Suspended	Stillwater Creek: Lower	OK620900-04-0040C	19	1	243	136	593	7	7	19	70	2463
Total Suspended	Stillwater Creek: Upper	OK620900-04-0070T	21	2	46.6	13.6	62.4	7.1	7.1	28	64	274
Total Suspended	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	39.9	15.4	65.5	7.1	7.1	17	49.5	286
Total Suspended	Turkey Creek: Lower	OK620910-06-0010B	20	1	169.1	88.1	393.9	7.1	7.1	36.5	109.5	1654
Total Suspended	Turkey Creek: Upper	OK620910-06-0010T	20	1	66.3	30.3	135.4	7.1	7.1	20.5	55	609
Total Suspended	Uncle John's Creek	OK620910-05-0030C	20	1	151.2	67.5	302	7.1	7.1	26.5	203.5	1336
Total Suspended	West Clay Creek	OK621010-01-0090R	20	1	17.38	2.69	12.05	7.07	7.07	14	25.25	50
Total Suspended	Wolf Creek: Lower	OK720500-02-0030M	20	1	19.31	1.94	8.67	7.07	11.75	20.5	24.5	40
Total Suspended	Wolf Creek: Upper	OK720500-03-0010G	20	1	24.17	5.08	22.71	7.07	7.07	15	33.75	85
Total Suspended	Yellowstone Creek	OK621010-01-0270C	17	2	9.76	1.32	5.43	7.07	7.07	7.07	12.5	28
TotDisSolids	Beaver Creek: Logan Co.	OK620900-03-0230C	20	1	527.7	38.4	171.6	227	422.8	566.5	663.3	822
TotDisSolids	Beaver Creek: Osage Co.	OK621210-00-0050L	18	0	257	9.39	39.85	190	222.75	258	297.5	319
TotDisSolids	Bent Creek	OK720500-01-0070D	20	1	2011.4	53.3	238.3	1363	1833	2111	2186	2255
TotDisSolids	Bitter Creek	OK621100-00-0100G	17	1	2049	173	714	820	1261	2206	2681	2878
TotDisSolids	Black Bear Creek: Lower	OK621200-03-0010D	20	1	408.3	43.5	194.6	177	261.3	326	579.3	758
TotDisSolids	Black Bear Creek: Middle	OK621200-03-0010M	20	1	558.7	65.3	291.9	226	263.8	549.5	782	1023
TotDisSolids	Black Bear Creek: Upper	OK621200-03-0010W	20	1	688.9	78.5	350.8	26	359	758.5	952.5	1210
TotDisSolids	Bois d'Arc Creek	OK621000-03-0010C	17	1	900.4	50	206.3	274	867.5	948	1043.5	1088
TotDisSolids	Buffalo Creek: Lower	OK620920-05-0010G	20	1	2703	117	523	780	2615	2752	2963	3404
TotDisSolids	Buffalo Creek: Upper	OK620920-05-0010P	20	1	2243	109	489	542	2077	2184	2586	2896
TotDisSolids	Chickaskia River: Lower	OK621100-00-0010B	17	0	621.6	34.6	142.5	306	541	667	702	801
TotDisSolids	Chickaskia River: Upper	OK621100-00-0010M	17	0	628	160	658	263	434	497	511	3168
TotDisSolids	Chilocco Creek	OK621210-00-0270C	17	1	466.3	49.7	204.9	300	374.5	427	495	1218
TotDisSolids	Cimarron River: Beaver Co.	OK620930-00-0010T	20	1	2636.1	22.9	102.4	2461	2556.5	2625	2710.8	2814

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
TotDisSolids	Cimarron River: Cimarron Co.	OK720900-00-0180C	17	1	1671	131	542	586	1304	1853	2091	2403
TotDisSolids	Clear Creek: Beaver Co.	OK720500-02-0300F	20	1	957.7	59.3	265.4	725	756.5	824	1163.5	1670
TotDisSolids	Clear Creek: Harper Co.	OK720500-02-0070G	20	1	417.5	3.74	16.71	397	406.25	411.5	426	456
TotDisSolids	Cooper Creek	OK620910-02-0040C	20	1	1633.1	91.8	410.5	507	1436	1737	1925.8	2033
TotDisSolids	Cottonwood Creek	OK620910-04-0010D	20	1	642.9	35.7	159.8	261	516.5	709.5	776	799
TotDisSolids	Council Creek	OK620900-02-0050H	20	2	394.4	29.2	130.6	210	294	377.5	498.8	636
TotDisSolids	Crooked Creek: Beaver Co.	OK620930-00-0100G	20	1	2512.1	31.6	141.3	2100	2478	2530	2609.5	2681
TotDisSolids	Crooked Creek: Grant Co.	OK621000-06-0010C	20	1	928.1	65.2	291.7	523	679	917.5	1115.8	1701
TotDisSolids	Dead Indian Creek	OK620910-05-0080D	20	1	1729.5	86.2	385.6	834	1478.5	1723.5	1980.3	2593
TotDisSolids	Deep Creek	OK620910-02-0250C	20	1	1872	119	530	464	1700	2038	2251	2330
TotDisSolids	Deer Creek	OK621000-04-0010D	17	1	846.9	65.4	269.6	233	593.5	882	1080.5	1197
TotDisSolids	Doga Creek	OK621200-02-0020C	19	1	324.6	20.1	87.6	182	229	347	394	441
TotDisSolids	Driftwood Creek	OK621010-03-0030C	20	1	1543.1	69.4	310.6	626	1471.8	1564.5	1771.8	1922
TotDisSolids	Duck Pond Creek	OK720500-02-0250F	20	1	641.2	12.1	54.1	453	616.3	643.5	677	699
TotDisSolids	Dugout Creek	OK620900-03-0080C	20	1	467.8	21.9	97.9	246	432.3	501	511	630
TotDisSolids	Eagle Chief Creek: Lower	OK620920-04-0010C	20	1	994	37.7	168.7	749	813.8	1026.5	1114.5	1315
TotDisSolids	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	1904.4	84.1	376.2	1199	1518.3	2032.5	2237.3	2389
TotDisSolids	Euchee Creek	OK620900-01-0290D	20	1	336.1	25.4	113.8	149	235.5	329.5	427.8	607
TotDisSolids	Gray Horse Creek	OK621200-01-0400C	19	1	292.3	20.9	91.3	128	208	289	337	451
TotDisSolids	Griever Creek	OK620920-01-0130G	20	1	2964	114	511	1691	2764	3002	3309	4112
TotDisSolids	Indian Creek: Major Co.	OK620910-02-0310C	20	1	894	19.8	88.7	599	867	884.5	947.3	1013
TotDisSolids	Indian Creek: Woodward Co.	OK720500-01-0200D	20	1	1038.9	17.9	80.1	909	983.5	1021.5	1123.8	1210
TotDisSolids	Kingfisher Creek	OK620910-05-0010J	20	1	1711.5	50.7	226.6	1163	1562.8	1746.5	1816.8	2105
TotDisSolids	Kiowa Creek: Harper Co.	OK720500-02-0130C	20	1	528.9	7.14	31.91	456	514.5	533.5	541.25	599
TotDisSolids	Kiowa Creek: Beaver Co.	OK720500-02-0130M	20	1	560.9	7.74	34.63	462	551	564.5	575.75	617
TotDisSolids	Lagoon Creek	OK620900-01-0180J	20	1	290.8	22.6	101	140	192	284.5	399.8	451
TotDisSolids	Long Creek	OK620920-02-0080D	20	1	2646.2	91.7	410.2	2018	2392.8	2507.5	2932	3504
TotDisSolids	Main Creek	OK620920-01-0180F	20	1	2992.1	69	308.5	1795	2941.3	3051	3104	3401
TotDisSolids	Medicine Lodge River	OK621010-03-0010D	20	1	785.7	30.1	134.5	542	663.3	795	886.5	1081
TotDisSolids	Otter Creek: Harper Co.	OK720500-02-0050B	18	1	1145.9	49.8	211.3	961	1030	1074	1210.5	1821
TotDisSolids	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	582.8	33.6	150.1	151	480.5	649.5	683.5	728
TotDisSolids	Palo Duro Creek	OK720500-02-0500G	20	2	1718.1	44.8	200.2	1436	1606.5	1713	1787	2254
TotDisSolids	Persimmon Creek	OK720500-01-0150G	20	1	645.4	11.7	52.5	547	608.5	634	691.8	751
TotDisSolids	Pond Creek	OK621000-05-0010D	20	1	822.9	52.7	235.7	284	694.8	866.5	970	1164
TotDisSolids	Red Rock Creek: Lower	OK621200-05-0010K	20	1	611.2	63.6	284.2	202	382	515	872	1045
TotDisSolids	Red Rock Creek: Upper	OK621200-05-0010M	20	1	732.4	66.8	298.6	242	492.3	776.5	1021.3	1130
TotDisSolids	Salt Creek: Lower	OK621200-04-0010F	19	1	305.3	31.5	137.3	28	236	281	340	667
TotDisSolids	Salt Creek: Upper	OK621200-04-0010P	18	1	235.4	13.5	57.4	132	186	235	290.8	312
TotDisSolids	Salt Fork of Arkansas River	OK621010-01-0010D	20	1	3633	512	2289	1352	2285	3202	4184	11902
TotDisSolids	Salt Creek: Kingfisher Co.	OK620910-02-0100D	20	1	9152	633	2833	3287	6520	9926	10999	13890
TotDisSolids	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	359.5	29.4	131.5	172	247	338	466.3	631
TotDisSolids	Sand Creek	OK620920-05-0050J	20	3	3305	169	757	471	3181	3428	3736	4054

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
TotDisSolids	Sandy Creek	OK621010-02-0010D	20	1	546.3	28.8	128.8	436	476.8	513	596.5	1019
TotDisSolids	Skeleton Creek: Lower	OK620910-03-0010F	20	0	891.8	60.7	271.3	231	774.8	1004	1075.3	1161
TotDisSolids	Skeleton Creek: Upper	OK620910-03-0010S	20	1	1116.3	42.5	190.1	680	1015.5	1160.5	1237.3	1398
TotDisSolids	Spring Creek	OK720500-02-0100D	19	2	357.58	6.26	27.28	307	337	347	384	403
TotDisSolids	Stillwater Creek: Lower	OK620900-04-0040C	19	1	447.8	45.6	198.9	148	267	419	651	737
TotDisSolids	Stillwater Creek: Upper	OK620900-04-0070T	21	2	328.8	31.2	143	194	211.5	262	458.5	619
TotDisSolids	Turkey Creek: Woods Co.	OK621010-01-0230G	18	1	3115	124	527	1704	2893	3283	3428	3759
TotDisSolids	Turkey Creek: Lower	OK620910-06-0010B	20	1	861.1	36	161.1	527	783	935.5	967.8	1077
TotDisSolids	Turkey Creek: Upper	OK620910-06-0010T	20	1	973.7	56	250.6	465	786.5	1061.5	1145.8	1397
TotDisSolids	Uncle John's Creek	OK620910-05-0030C	20	1	636.6	34.7	155.2	348	496.3	676.5	771.5	891
TotDisSolids	West Clay Creek	OK621010-01-0090R	20	1	7313	963	4308	2978	3846	5428	10562	15833
TotDisSolids	Wolf Creek: Lower	OK720500-02-0030M	20	1	756.4	42.8	191.5	424	649.8	687	895.3	1148
TotDisSolids	Wolf Creek: Upper	OK720500-03-0010G	20	1	615.4	11.6	51.7	428	608.3	618.5	629.8	709
TotDisSolids	Yellowstone Creek	OK621010-01-0270C	17	2	2664	36.4	150.1	2312	2588	2668	2774.5	2929
Turbidity (NTU)	Beaver Creek: Logan Co.	OK620900-03-0230C	19	2	117.8	55.4	241.7	4.2	15.9	30.7	59.1	1000
Turbidity (NTU)	Beaver Creek: Osage Co.	OK621210-00-0050L	17	1	84.7	43.7	180.4	5.3	16.3	25.1	43	714
Turbidity (NTU)	Bent Creek	OK720500-01-0070D	21	0	8.54	3.12	14.29	1.11	2.05	3.46	6.94	61.9
Turbidity (NTU)	Bitter Creek	OK621100-00-0100G	18	0	52.3	17.1	72.6	6.6	11.6	23.1	63.7	283
Turbidity (NTU)	Black Bear Creek: Lower	OK621200-03-0010D	21	0	245.6	77.4	354.6	1.6	16.6	27.2	464.5	1000
Turbidity (NTU)	Black Bear Creek: Middle	OK621200-03-0010M	19	2	160.8	50.8	221.3	6	20.4	44.7	248	772
Turbidity (NTU)	Black Bear Creek: Upper	OK621200-03-0010W	19	2	92.7	28.1	122.4	4.9	10.6	26.3	175	380
Turbidity (NTU)	Bois d'Arc Creek	OK621000-03-0010C	18	0	61.2	23.3	98.9	7	20.6	34.9	60.5	443
Turbidity (NTU)	Buffalo Creek: Lower	OK620920-05-0010G	21	0	17.9	13.7	62.6	1.1	2.2	3.9	5.3	291
Turbidity (NTU)	Buffalo Creek: Upper	OK620920-05-0010P	21	0	51.8	47.4	217.3	0.9	1.6	3.2	6.3	1000
Turbidity (NTU)	Chickaskia River: Lower	OK621100-00-0010B	17	0	106.1	33.5	138	10.8	20.3	54.2	121.1	489.1
Turbidity (NTU)	Chickaskia River: Upper	OK621100-00-0010M	16	1	143.2	64.4	257.6	10.5	17.2	37.9	156	1000
Turbidity (NTU)	Chilocco Creek	OK621210-00-0270C	18	0	48.9	11.5	48.8	5.6	12	29.5	78.1	154
Turbidity (NTU)	Cimarron River: Beaver Co.	OK620930-00-0010T	21	0	18.28	3.14	14.38	2.87	5.71	15.8	27.95	52.2
Turbidity (NTU)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	18.79	7.2	30.56	3.56	5.43	8.56	13.7	132
Turbidity (NTU)	Clear Creek: Beaver Co.	OK720500-02-0300F	21	0	3.55	0.862	3.951	0.89	1.15	1.84	4.425	15.8
Turbidity (NTU)	Clear Creek: Harper Co.	OK720500-02-0070G	21	0	5.126	0.914	4.189	1.71	2.255	4.03	6.72	19.2
Turbidity (NTU)	Cooper Creek	OK620910-02-0040C	21	0	103.4	42.6	195.4	4.6	6.2	20.8	75	795
Turbidity (NTU)	Cottonwood Creek	OK620910-04-0010D	20	1	183.7	73	326.3	8.5	16.9	30.8	161.5	1000
Turbidity (NTU)	Council Creek	OK620900-02-0050H	22	0	85	42.3	198.3	2.5	5.1	8.6	56.8	805
Turbidity (NTU)	Crooked Creek: Beaver Co.	OK620930-00-0100G	21	0	12.58	3.75	17.18	0.97	2.7	5.42	12.85	66.3
Turbidity (NTU)	Crooked Creek: Grant Co.	OK621000-06-0010C	21	0	40.8	10.3	47	3.6	10.3	25.5	50.8	201
Turbidity (NTU)	Dead Indian Creek	OK620910-05-0080D	21	0	75.2	39.2	179.7	3.5	5.7	12.1	56.8	812
Turbidity (NTU)	Deep Creek	OK620910-02-0250C	21	0	90.1	49.2	225.3	2.7	9	14.5	36.4	1000
Turbidity (NTU)	Deer Creek	OK621000-04-0010D	18	0	144.7	59.1	250.6	8.1	18.9	37.2	126	1000
Turbidity (NTU)	Doga Creek	OK621200-02-0020C	20	0	76.1	31.7	141.6	4.9	8.9	13.8	56.3	513
Turbidity (NTU)	Driftwood Creek	OK621010-03-0030C	21	0	96.3	38.8	178	8.6	20	39.1	89.2	829
Turbidity (NTU)	Duck Pond Creek	OK720500-02-0250F	21	0	8.15	1.31	6.01	1.95	3.78	6.69	10.6	25.4

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Turbidity (NTU)	Dugout Creek	OK620900-03-0080C	21	0	75.3	36.1	165.5	4.2	5.2	13.5	76.5	754
Turbidity (NTU)	Eagle Chief Creek: Lower	OK620920-04-0010C	21	0	64.9	21.5	98.4	3.5	12.4	23	75.1	387
Turbidity (NTU)	Eagle Chief Creek: Upper	OK620920-04-0010G	20	1	48.4	22.4	100.3	4.6	10.7	17.2	31.6	431
Turbidity (NTU)	Euchee Creek	OK620900-01-0290D	21	0	74.5	30	137.5	6.8	17.2	25.3	59.8	606
Turbidity (NTU)	Gray Horse Creek	OK621200-01-0400C	18	2	89.5	37.3	158.2	7.3	12	16.7	77.9	575
Turbidity (NTU)	Griever Creek	OK620920-01-0130G	20	1	57.9	49.6	221.9	1.8	2.6	5.6	11.9	1000
Turbidity (NTU)	Indian Creek: Major Co.	OK620910-02-0310C	21	0	70.5	47.9	219.4	2	3.7	7.1	20.4	986
Turbidity (NTU)	Indian Creek: Woodward Co.	OK720500-01-0200D	21	0	13.12	1.56	7.15	3.7	7.36	10.7	18.7	27
Turbidity (NTU)	Kingfisher Creek	OK620910-05-0010J	21	0	126.3	49.6	227.2	8	14.4	43	124.5	1000
Turbidity (NTU)	Kiowa Creek: Harper Co.	OK720500-02-0130C	21	0	15.79	3.45	15.81	3.48	6.29	8.17	25.5	67.6
Turbidity (NTU)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	21	0	13.73	3.28	15.03	2.12	4.16	7.04	19.75	66.1
Turbidity (NTU)	Lagoon Creek	OK620900-01-0180J	21	0	66.8	35.8	163.9	1.6	6.9	12	56.1	761
Turbidity (NTU)	Long Creek	OK620920-02-0080D	21	0	18.72	3.34	15.32	3.06	6.96	10.7	32.65	50.7
Turbidity (NTU)	Main Creek	OK620920-01-0180F	21	0	67.9	46.9	214.8	3.2	6.3	11.9	31.6	1000
Turbidity (NTU)	Medicine Lodge River	OK621010-03-0010D	21	0	93.1	46.8	214.4	2.6	12.8	24.9	91	1000
Turbidity (NTU)	Otter Creek: Harper Co.	OK720500-02-0050B	19	0	7.26	1.65	7.2	2.33	3.58	4.76	7.25	32.9
Turbidity (NTU)	Otter Creek: Logan Co.	OK620910-03-0040C	20	1	95.6	53.3	238.3	4.6	10.2	17.3	32.4	1000
Turbidity (NTU)	Palo Duro Creek	OK720500-02-0500G	21	1	5.54	2.42	11.09	0.98	1.51	3.26	4.24	53
Turbidity (NTU)	Persimmon Creek	OK720500-01-0150G	21	0	39.59	8.84	40.49	7.48	12.65	26.7	48.25	189
Turbidity (NTU)	Pond Creek	OK621000-05-0010D	21	0	116.8	31.7	145.3	6.7	22	49.7	190.5	620
Turbidity (NTU)	Red Rock Creek: Lower	OK621200-05-0010K	19	2	183.8	50	217.9	7.9	36.2	117	254	841
Turbidity (NTU)	Red Rock Creek: Upper	OK621200-05-0010M	19	2	121.2	29.8	129.8	3.7	21.2	57.9	208	405
Turbidity (NTU)	Salt Creek: Lower	OK621200-04-0010F	18	2	65.6	23.6	100	4	6	14	111.5	362
Turbidity (NTU)	Salt Creek: Upper	OK621200-04-0010P	17	2	32.5	13.3	54.8	2.4	10.7	19.5	28.5	239
Turbidity (NTU)	Salt Fork of Arkansas River	OK621010-01-0010D	21	0	148.9	41.5	190.2	19.6	62	90.3	170	934
Turbidity (NTU)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	21	0	128.7	65.2	298.6	1.9	4.2	6.1	17.1	1000
Turbidity (NTU)	Salt Creek: Payne Co.	OK620900-02-0020D	20	1	49.9	21.8	97.5	3.8	7.3	16	30.8	390
Turbidity (NTU)	Sand Creek	OK620920-05-0050J	21	2	18.31	6.1	27.94	1.57	3.37	10	15.8	117
Turbidity (NTU)	Sandy Creek	OK621010-02-0010D	21	0	27.8	4.86	22.26	2.58	11.69	15.8	43.65	86.3
Turbidity (NTU)	Skeleton Creek: Lower	OK620910-03-0010F	19	1	151.7	67.2	293.1	6	18	47.7	73.6	1000
Turbidity (NTU)	Skeleton Creek: Upper	OK620910-03-0010S	21	0	92.5	26.9	123.5	9.5	30	53.7	77	520
Turbidity (NTU)	Spring Creek	OK720500-02-0100D	21	0	4.18	2.41	11.05	0.3	0.51	0.93	2.37	51.4
Turbidity (NTU)	Stillwater Creek: Lower	OK620900-04-0040C	19	1	156.3	70.5	307.1	8.4	18.9	35	94.3	1000
Turbidity (NTU)	Stillwater Creek: Upper	OK620900-04-0070T	21	2	38.36	5.82	26.67	4.59	17.55	34	56.1	97.9
Turbidity (NTU)	Turkey Creek: Woods Co.	OK621010-01-0230G	19	0	49.1	15.2	66.2	2.6	9.1	17.1	84.5	262
Turbidity (NTU)	Turkey Creek: Lower	OK620910-06-0010B	21	0	128.6	64.1	293.5	2.3	5.7	12.9	71.6	1000
Turbidity (NTU)	Turkey Creek: Upper	OK620910-06-0010T	21	0	78.2	47	215.4	2.4	5.7	13.1	49.1	1000
Turbidity (NTU)	Uncle John's Creek	OK620910-05-0030C	21	0	134.7	50	228.9	4.3	9.2	27.1	183.5	1000
Turbidity (NTU)	West Clay Creek	OK621010-01-0090R	21	0	22.78	8.97	41.12	3.09	4.98	7.72	27.45	191
Turbidity (NTU)	Wolf Creek: Lower	OK720500-02-0030M	21	0	33.4	4.21	19.29	11.5	17.6	26.7	45.85	80
Turbidity (NTU)	Wolf Creek: Upper	OK720500-03-0010G	21	0	13.03	2.08	9.53	3.47	6.2	10.3	16.05	42.2
Turbidity (NTU)	Yellowstone Creek	OK621010-01-0270C	19	0	9.12	2.02	8.83	1.81	3.6	6.56	12.6	38.2

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Base Flow (cfs)	Beaver Creek: Logan Co.	OK620900-03-0230C	10	6	2.995	0.934	2.954	0	0	1.92	6.398	6.97
Base Flow (cfs)	Beaver Creek: Osage Co.	OK621210-00-0050L	10	2	10.93	2.52	7.96	0	4.95	11.64	14.59	27.27
Base Flow (cfs)	Bent Creek	OK720500-01-0070D	17	2	12.7	3.03	12.51	1.15	7.6	11.27	13.46	58.52
Base Flow (cfs)	Bitter Creek	OK621100-00-0100G	14	1	13.93	2.15	8.03	4.86	8.03	11.01	18.33	30.31
Base Flow (cfs)	Black Bear Creek: Lower	OK621200-03-0010D	12	0	41.32	8.41	29.12	20.9	25.45	29.31	44.7	122.91
Base Flow (cfs)	Black Bear Creek: Middle	OK621200-03-0010M	7	6	28.5	10.9	28.8	11.4	14.2	14.5	36.8	90.8
Base Flow (cfs)	Black Bear Creek: Upper	OK621200-03-0010W	9	5	17.62	4.03	12.08	6.73	9.07	10.31	28.86	38.26
Base Flow (cfs)	Bois d'Arc Creek	OK621000-03-0010C	15	0	15.41	2.18	8.45	0	ek 9.25	15.53	20.56	31.64
Base Flow (cfs)	Buffalo Creek: Lower	OK620920-05-0010G	18	2	7.234	0.987	4.189	2.47	3.13	7.665	9.653	17.09
Base Flow (cfs)	Buffalo Creek: Upper	OK620920-05-0010P	18	2	4.496	0.876	3.716	0.28	1.7	3.45	6.753	12.42
Base Flow (cfs)	Chickaskia River: Lower	OK621100-00-0010B	3	6	39.51	8.61	14.92	30.16	er 30.16	31.66	56.72	56.72
Base Flow (cfs)	Chickaskia River: Upper	OK621100-00-0010M	3	7	90.2	24.1	41.8	44.7	er 44.7	98.9	126.9	126.9
Base Flow (cfs)	Chilocco Creek	OK621210-00-0270C	12	3	5.86	1.41	4.9	0	0.75	6.38	10.28	12.91
Base Flow (cfs)	Cimarron River: Beaver Co.	OK620930-00-0010T	18	3	29.26	2.68	11.39	11.91	r 17.17	31.85	34.82	56.42
Base Flow (cfs)	Cimarron River: Cimarron Co.	OK720900-00-0180C	18	0	0.207	0.195	0.826	0	ro 0.000	0	0	3.51
Base Flow (cfs)	Clear Creek: Beaver Co.	OK720500-02-0300F	18	3	2.37	1.23	5.2	0	o. 0.00	0.03	2.98	21.37
Base Flow (cfs)	Clear Creek: Harper Co.	OK720500-02-0070G	18	3	5.882	0.522	2.214	3.08	o. 4.185	5.505	7.04	10.86
Base Flow (cfs)	Cooper Creek	OK620910-02-0040C	16	1	8.46	1.22	4.87	2.57	4.35	7.54	11.2	20.78
Base Flow (cfs)	Cottonwood Creek	OK620910-04-0010D	6	8	55.7	14.3	35	17.9	ek 28.8	49.5	79.3	118.7
Base Flow (cfs)	Council Creek	OK620900-02-0050H	18	1	5.66	1.68	7.14	0.45	1.39	2.85	7.51	28.28
Base Flow (cfs)	Crooked Creek: Beaver Co.	OK620930-00-0100G	15	6	6.15	1.27	4.92	0	Be 2.70	6.02	10.62	16.71
Base Flow (cfs)	Crooked Creek: Grant Co.	OK621000-06-0010C	11	5	16.87	4.36	14.45	1.55	Gr 4.54	8.32	29.69	42.04
Base Flow (cfs)	Dead Indian Creek	OK620910-05-0080D	15	1	9.87	3.89	15.08	1.08	ee 3.59	5.05	8.01	60.68
Base Flow (cfs)	Deep Creek	OK620910-02-0250C	17	1	20	12.2	50.4	1.4	2.5	6	12	213.4
Base Flow (cfs)	Deer Creek	OK621000-04-0010D	13	0	10.73	2.57	9.26	1.3	2.8	10.09	16.65	31.57
Base Flow (cfs)	Doga Creek	OK621200-02-0020C	15	1	0.863	0.305	1.182	0	0	0.18	1.89	3.65
Base Flow (cfs)	Driftwood Creek	OK621010-03-0030C	15	4	6.77	1.12	4.33	0.08	k 3.48	6.48	9.65	16.35
Base Flow (cfs)	Duck Pond Creek	OK720500-02-0250F	17	4	0.6665	0.0927	0.3823	0	k 0.3250	0.74	0.895	1.48
Base Flow (cfs)	Dugout Creek	OK620900-03-0080C	12	4	44.7	41	142	0.4	0.5	2.6	7.2	495.6
Base Flow (cfs)	Eagle Chief Creek: Lower	OK620920-04-0010C	17	1	22.19	3.2	13.19	8.23	12.29	18.23	28.04	52.6
Base Flow (cfs)	Eagle Chief Creek: Upper	OK620920-04-0010G	15	3	5.948	0.755	2.924	0.84	4.39	4.93	7.46	12.74
Base Flow (cfs)	Euchee Creek	OK620900-01-0290D	16	0	0	0	0	0	0	0	0	0
Base Flow (cfs)	Gray Horse Creek	OK621200-01-0400C	16	0	7.03	3.24	12.96	0.08	0.39	0.6	6.35	47.26
Base Flow (cfs)	Griever Creek	OK620920-01-0130G	17	2	1.486	0.234	0.964	0.04	0.845	1.59	2.14	3.52
Base Flow (cfs)	Indian Creek: Major Co.	OK620910-02-0310C	18	1	14.24	2.32	9.86	4.02	8.16	11.08	17.56	44.8
Base Flow (cfs)	Indian Creek: Woodward Co.	OK720500-01-0200D	19	2	5.362	0.704	3.07	1.26	3.1	4.73	6.62	13.28
Base Flow (cfs)	Kingfisher Creek	OK620910-05-0010J	15	1	23.91	4.75	18.41	6.28	8.91	16.64	36.89	58.47
Base Flow (cfs)	Kiowa Creek: Harper Co.	OK720500-02-0130C	16	3	9.65	1.08	4.3	1.61	6.72	10.55	12.35	18.53
Base Flow (cfs)	Kiowa Creek: Beaver Co.	OK720500-02-0130M	16	3	3.999	0.3	1.201	1.56	3.465	4.225	4.85	5.82
Base Flow (cfs)	Lagoon Creek	OK620900-01-0180J	15	1	6.14	2.74	10.63	0	0.16	1.12	10.9	35.27
Base Flow (cfs)	Long Creek	OK620920-02-0080D	17	4	1.834	0.5	2.061	0	0.84	1.29	2.555	8.96
Base Flow (cfs)	Main Creek	OK620920-01-0180F	18	2	9.34	1.43	6.07	2.57	5.34	8.06	12.3	27.76

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	SiteName	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Base Flow (cfs)	Medicine Lodge River	OK621010-03-0010D	11	4	67	11.7	38.9	0.4	29.7	84.1	103.2	105.1
Base Flow (cfs)	Otter Creek: Harper Co.	OK720500-02-0050B	17	2	1.159	0.23	0.948	0	0.04	1.14	1.955	2.83
Base Flow (cfs)	Otter Creek: Logan Co.	OK620910-03-0040C	14	4	15.05	3.78	14.13	1.92	3.34	10.34	26.9	43.73
Base Flow (cfs)	Palo Duro Creek	OK720500-02-0500G	17	5	0.694	0.147	0.605	0	0.085	0.73	0.895	2.04
Base Flow (cfs)	Persimmon Creek	OK720500-01-0150G	17	2	14.38	1.51	6.22	2.8	9.42	15.39	19.87	27.16
Base Flow (cfs)	Pond Creek	OK621000-05-0010D	4	12	6.12	3.6	7.2	0	0	5.28	13.08	13.92
Base Flow (cfs)	Red Rock Creek: Lower	OK621200-05-0010K	10	4	27.9	12.9	40.7	6.2	9.4	12.9	27.7	141.6
Base Flow (cfs)	Red Rock Creek: Upper	OK621200-05-0010M	13	2	18.08	5.69	20.51	3.6	7.1	9.86	17.48	71.63
Base Flow (cfs)	Salt Creek: Lower	OK621200-04-0010F	15	3	37.1	13.3	51.3	0	8.2	19.6	48.8	200.8
Base Flow (cfs)	Salt Creek: Upper	OK621200-04-0010P	17	0	14.02	2.83	11.69	0	4	14.74	20.17	40.54
Base Flow (cfs)	Salt Fork of Arkansas River	OK621010-01-0010D	9	7	189.6	46.1	138.3	0	65.1	163.8	308.7	420.9
Base Flow (cfs)	Salt Creek: Kingfisher Co.	OK620910-02-0100D	16	1	67.4	40.9	163.5	5.3	14	22.7	32.5	674.8
Base Flow (cfs)	Salt Creek: Payne Co.	OK620900-02-0020D	17	2	6.63	2.79	11.5	0	0	1.43	12.03	44.57
Base Flow (cfs)	Sand Creek	OK620920-05-0050J	16	6	0.574	0.119	0.477	0.01	0.175	0.515	0.808	1.74
Base Flow (cfs)	Sandy Creek	OK621010-02-0010D	14	2	23.55	6.58	24.62	0	0	15.02	50.63	64.27
Base Flow (cfs)	Skeleton Creek: Lower	OK620910-03-0010F	3	12	96.1	15.3	26.6	65.4	65.4	110.2	112.6	112.6
Base Flow (cfs)	Skeleton Creek: Upper	OK620910-03-0010S	14	3	28.63	4.71	17.63	12.43	16.69	21.55	37.85	70.53
Base Flow (cfs)	Spring Creek	OK720500-02-0100D	16	4	0.7681	0.0867	0.3467	0	0.525	0.79	1.0525	1.23
Base Flow (cfs)	Stillwater Creek: Lower	OK620900-04-0040C	6	10	22.4	12.8	31.2	0	2.9	12.8	36.6	84.4
Base Flow (cfs)	Stillwater Creek: Upper	OK620900-04-0070T	10	9	8.36	2.55	8.06	0.4	0.59	7.79	15.46	21.65
Base Flow (cfs)	Turkey Creek: Woods Co.	OK621010-01-0230G	16	2	2.332	0.918	3.672	0.1	0.198	0.67	2.475	11.95
Base Flow (cfs)	Turkey Creek: Lower	OK620910-06-0010B	16	1	26.86	4.57	18.27	0.5	10.88	27.3	42.27	58.07
Base Flow (cfs)	Turkey Creek: Upper	OK620910-06-0010T	16	1	14.29	1.41	5.62	5.74	10.55	13.92	16.91	26.25
Base Flow (cfs)	Uncle John's Creek	OK620910-05-0030C	11	2	14.5	2.7	8.96	2.91	6.97	12.13	21.05	31.93
Base Flow (cfs)	West Clay Creek	OK621010-01-0090R	17	4	2.09	0.859	3.542	0.1	0.31	0.62	1.485	13.17
Base Flow (cfs)	Wolf Creek: Lower	OK720500-02-0030M	18	1	23.84	6.17	26.17	0.64	5.37	17.04	39.93	109.96
Base Flow (cfs)	Wolf Creek: Upper	OK720500-03-0010G	18	2	49.1	11.2	47.5	11.3	18.5	37	54	202.1
Base Flow (cfs)	Yellowstone Creek	OK621010-01-0270C	16	3	3.59	1.12	4.46	0.46	1.09	1.77	3.32	15.44

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	136	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	31	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	18	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	17	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	12	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	10	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	6	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	1	Percidae	Percina caprodes	Logperch	interm	1					
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Beaver Creek: Logan Co.	OK620900-03-0230C	40739	09-Jul-08	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	316	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	49	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	44	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	37	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	33	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	32	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	22	Percichthyidae	Morone chrysops	White bass	tol			1			
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	21	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	18	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	17	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	17	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	10	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	10	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	9	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	8	Catostomidae	Moxostoma	Redhorse sucker	intol	1					1
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	8	Percidae	Percina caprodes	Logperch	interm	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	4	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	3	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	3	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	2	Cyprinidae	Lythrurus umbratilis	Redfin shiner	interm	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	1	Centrarchidae	Unidentified Lepomis hybrid	Hybrid, green x bluegill sunfish	tol						
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	1	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			1			1
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Beaver Creek: Osage Co.	OK621210-00-0050L	44130	27-Jul-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	123	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	110	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	27	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	8	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	4	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	3	Cyprinidae	Platygobio gracilis	Flathead chub	intol	1				1	
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Bent Creek	OK720500-01-0070D	37892	26-Jul-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	151	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	53	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	2	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	2	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	1	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			1			
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	1	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Bitter Creek	OK621100-00-0100G	40741	05-Aug-08	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	312	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	118	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	37	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	36	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	33	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	11	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	8	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	7	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	7	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	4	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	2	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			1			
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	1	Percichthyidae	Morone chrysops	White bass	tol			1			
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Black Bear Creek: Lower	OK621200-03-0010D	40745	28-Aug-08	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	235	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	104	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	78	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	71	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	44	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	30	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	27	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	20	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	12	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	10	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	8	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	6	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	3	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Black Bear Creek: Middle	OK621200-03-0010M	40747	05-Sep-08	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	915	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	441	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	174	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	40	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	34	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	12	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	8	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	5	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	5	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	1	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Black Bear Creek: Upper	OK621200-03-0010W	44267	05-Aug-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	310	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	85	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	66	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	31	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	26	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	25	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	19	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	18	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	18	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	13	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	11	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	6	Catostomidae	Moxostoma erythrurum	Golden redhorse	interm	1					1
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	5	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	4	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	4	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	4	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	3	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	2	Percichthyidae	Morone chrysops	White bass	tol			1			
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	2	Percidae	Percina caprodes	Logperch	interm	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			1			
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Bois d'Arc Creek	OK621000-03-0010C	38765	04-Sep-07	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	293	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	88	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	14	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	10	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	7	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	5	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Buffalo Creek: Lower	OK620920-05-0010G	37178	13-Jun-07	1	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	624	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	401	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	75	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	21	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	17	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	16	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	14	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	7	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Buffalo Creek: Upper	OK620920-05-0010P	37177	13-Jun-07	1	Cyprinodontidae	Cyprinodon rubrofluviatilis	Red River pupfish	interm	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	33	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	21	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	14	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	8	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	6	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	3	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	2	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	2	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	2	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	1	Cyprinidae	Macrhybopsis aestivalis	Speckled chub	intol	1					
Chickaskia River: Lower	OK621100-00-0010B	44269	13-Aug-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	69	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	46	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	34	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	8	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	5	Clupeidae	Dorosoma petenense	Threadfin shad	interm		1				
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	4	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	2	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Catostomidae	Moxostoma erythrurum	Golden redhorse	interm	1					1
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Cyprinidae	Macrhybopsis aestivalis	Speckled chub	intol	1					
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Chickaskia River: Upper	OK621100-00-0010M	44270	13-Aug-09	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	72	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	38	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	16	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	15	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	11	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	9	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			1			1
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	8	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	7	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	3	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	3	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		1				
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Chilocco Creek	OK621210-00-0270C	40742	05-Aug-08	1	Percichthyidae	Morone chrysops	White bass	tol			1			
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	712	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	539	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	530	Cyprinodontidae	Cyprinodon rubrofluviatilis	Red River pupfish	interm	1					
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	86	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	78	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	54	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	25	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	4	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	2	Percidae	Etheostoma cragini	Arkansas darter	intol	1					1
Cimarron River: Beaver Co.	OK620930-00-0010T	38759	07-Sep-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	183	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	79	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	74	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	16	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	14	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	13	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	5	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Cimarron River: Cimarron Co.	OK720900-00-0180C	37891	19-Jul-07	2	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	50	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	40	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	30	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	7	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	6	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	4	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Clear Creek: Harper Co.	OK720500-02-0070G	37180	28-Jun-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	103	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	71	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	55	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	19	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	17	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	5	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Clear Creek: Beaver Co.	OK720500-02-0300F	38758	06-Sep-07	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	270	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	76	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	66	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	39	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	29	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	28	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	23	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	20	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	16	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	7	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	3	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	2	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	2	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Cooper Creek	OK620910-02-0040C	38094	08-Aug-07	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	100	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	21	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	6	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	4	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		1				
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Cottonwood Creek	OK620910-04-0010D	40738	09-Jul-08	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Council Creek	OK620900-02-0050H	37166	18-May-07	71	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Council Creek	OK620900-02-0050H	37166	18-May-07	68	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Council Creek	OK620900-02-0050H	37166	18-May-07	28	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Council Creek	OK620900-02-0050H	37166	18-May-07	25	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Council Creek	OK620900-02-0050H	37166	18-May-07	13	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Council Creek	OK620900-02-0050H	37166	18-May-07	5	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Council Creek	OK620900-02-0050H	37166	18-May-07	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Council Creek	OK620900-02-0050H	37166	18-May-07	2	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Council Creek	OK620900-02-0050H	37166	18-May-07	2	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		1				
Council Creek	OK620900-02-0050H	37166	18-May-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Council Creek	OK620900-02-0050H	37166	18-May-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	651	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	458	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	443	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	322	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	167	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	70	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	23	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	19	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	17	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	14	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	11	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	8	Percidae	Etheostoma cragini	Arkansas darter	intol	1					1
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	7	Cyprinidae	Carassius auratus	Goldfish	tol		1				
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	4	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	1	Cyprinodontidae	Cyprinodon rubrofluviatilis	Red River pupfish	interm	1					
Crooked Creek: Beaver Co.	OK620930-00-0100G	38089	02-Aug-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	255	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	216	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	207	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	96	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	78	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	71	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	60	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	34	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	27	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	22	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	16	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	14	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	11	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	10	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	7	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	3	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Crooked Creek: Grant Co.	OK621000-06-0010C	38096	09-Aug-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	541	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	111	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	90	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	23	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	22	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	14	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	11	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Dead Indian Creek	OK620910-05-0080D	37172	07-Jun-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	105	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	104	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	76	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	36	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	31	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	30	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	20	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	12	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	12	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	12	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	2	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Deep Creek	OK620910-02-0250C	38750	15-Aug-07	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	165	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	111	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	59	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	41	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	24	Esocidae	Esox niger	Chain pickerel	intol			1			
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	18	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	15	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	11	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	4	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Percidae	Percina caprodes	Logperch	interm	1					
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Catostomidae	Moxostoma erythrurum	Golden redhorse	interm	1					1
Deer Creek	OK621000-04-0010D	38767	18-Sep-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	115	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	84	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	83	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	46	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	24	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	22	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	16	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	13	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	11	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	7	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	2	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	2	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			1			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Percichthyidae	Morone chrysops	White bass	tol			1			
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Percidae	Etheostoma spectabile	Orangethroat darter	interm	1					1
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			1			1
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Doga Creek	OK621200-02-0020C	38766	17-Sep-07	1	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			1			
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	224	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	78	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	58	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	41	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	23	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	21	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	13	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	12	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	8	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	7	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	6	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	4	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	3	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Driftwood Creek	OK621010-03-0030C	38754	21-Aug-07	1	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	292	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	80	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	32	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	29	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	20	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	12	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	6	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	6	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Duck Pond Creek	OK720500-02-0250F	38757	06-Sep-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Dugout Creek	OK620900-03-0080C	37169	22-May-07	577	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Dugout Creek	OK620900-03-0080C	37169	22-May-07	29	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Dugout Creek	OK620900-03-0080C	37169	22-May-07	22	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Dugout Creek	OK620900-03-0080C	37169	22-May-07	17	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Dugout Creek	OK620900-03-0080C	37169	22-May-07	11	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Dugout Creek	OK620900-03-0080C	37169	22-May-07	10	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Dugout Creek	OK620900-03-0080C	37169	22-May-07	7	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Dugout Creek	OK620900-03-0080C	37169	22-May-07	5	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Dugout Creek	OK620900-03-0080C	37169	22-May-07	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Dugout Creek	OK620900-03-0080C	37169	22-May-07	2	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Dugout Creek	OK620900-03-0080C	37169	22-May-07	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	339	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	112	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	68	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	38	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	27	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	22	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	16	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	10	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	6	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	3	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Eagle Chief Creek: Lower	OK620920-04-0010C	38098	10-Aug-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	366	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	52	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	31	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	22	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	19	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	9	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	6	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	4	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Eagle Chief Creek: Upper	OK620920-04-0010G	38097	10-Aug-07	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	44	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	22	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	14	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	7	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	7	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	3	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	3	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	3	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Catostomidae	Ictiobus niger	Black buffalo	interm	1					
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			1			
Euchee Creek	OK620900-01-0290D	38769	04-Oct-07	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	45	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	34	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	34	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	24	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	17	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	13	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	10	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	5	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			1			
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	3	Percichthyidae	Morone chrysops	White bass	tol			1			
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	2	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	2	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			1			1
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	2	Clupeidae	Dorosoma petenense	Threadfin shad	interm		1				
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Percidae	Percina caprodes	Logperch	interm	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Percidae	Etheostoma spectabile	Orangethroat darter	interm	1					1
Gray Horse Creek	OK621200-01-0400C	38160	14-Aug-07	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	415	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	107	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	39	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	6	Cyprinidae	Notropis bairdi	Red River shiner	tol	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	4	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	2	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	2	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	2	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Griever Creek	OK620920-01-0130G	37173	12-Jun-07	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	200	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	175	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	154	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	130	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	126	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	26	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	23	Cyprinidae	Notropis bairdi	Red River shiner	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	20	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	19	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	15	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	10	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	8	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	5	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	3	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	2	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	2	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Indian Creek: Major Co.	OK620910-02-0310C	37171	31-May-07	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	251	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	49	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	48	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	33	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	28	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	21	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	15	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	15	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	11	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	6	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar							
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Indian Creek: Woodward Co.	OK720500-01-0200D	37893	26-Jul-07	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	177	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	50	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	36	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	29	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	13	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	9	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	9	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	8	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	1	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Kingfisher Creek	OK620910-05-0010J	38093	08-Aug-07	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	393	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	300	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	218	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	69	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	55	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	35	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	32	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	22	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	14	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	3	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Kiowa Creek: Beaver Co.	OK720500-02-0130M	38086	01-Aug-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	416	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	329	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	151	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	103	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	64	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	56	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	55	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	49	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	44	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	20	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	11	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	8	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	4	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Kiowa Creek: Harper Co.	OK720500-02-0130C	38760	07-Sep-07	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	89	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	73	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	58	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	36	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	8	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	8	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	3	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	3	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			1			
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	3	Percidae	Percina caprodes	Logperch	interm	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	2	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	2	Centrarchidae	Unidentified Lepomis hybrid	Hybrid, sunfish							
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	2	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Lagoon Creek	OK620900-01-0180J	37168	21-May-07	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Long Creek	OK620920-02-0080D	37175	12-Jun-07	210	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Long Creek	OK620920-02-0080D	37175	12-Jun-07	117	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	93	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	59	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	46	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Long Creek	OK620920-02-0080D	37175	12-Jun-07	24	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	13	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Long Creek	OK620920-02-0080D	37175	12-Jun-07	10	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Long Creek	OK620920-02-0080D	37175	12-Jun-07	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Long Creek	OK620920-02-0080D	37175	12-Jun-07	2	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Long Creek	OK620920-02-0080D	37175	12-Jun-07	2	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Long Creek	OK620920-02-0080D	37175	12-Jun-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Long Creek	OK620920-02-0080D	37175	12-Jun-07	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Long Creek	OK620920-02-0080D	37175	12-Jun-07	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Long Creek	OK620920-02-0080D	37175	12-Jun-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Main Creek	OK620920-01-0180F	37174	12-Jun-07	101	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Main Creek	OK620920-01-0180F	37174	12-Jun-07	74	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Main Creek	OK620920-01-0180F	37174	12-Jun-07	44	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Main Creek	OK620920-01-0180F	37174	12-Jun-07	3	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Main Creek	OK620920-01-0180F	37174	12-Jun-07	3	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Main Creek	OK620920-01-0180F	37174	12-Jun-07	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Main Creek	OK620920-01-0180F	37174	12-Jun-07	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Main Creek	OK620920-01-0180F	37174	12-Jun-07	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	232	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	91	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	81	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	47	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	35	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	32	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	27	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	19	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	13	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	10	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	7	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	5	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	1	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Medicine Lodge River	OK621010-03-0010D	38763	27-Aug-07	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	428	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	108	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	48	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	41	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	35	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	16	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	12	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	11	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	10	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	8	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	3	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	2	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Otter Creek: Logan Co.	OK620910-03-0040C	38764	29-Aug-07	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	19	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	15	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Otter Creek: Harper Co.	OK720500-02-0050B	37181	28-Jun-07	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Palo Duro Creek	OK720500-02-0500G	37179	27-Jun-07	29	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Palo Duro Creek	OK720500-02-0500G	37179	27-Jun-07	19	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Palo Duro Creek	OK720500-02-0500G	37179	27-Jun-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	430	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	149	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	70	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	46	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	29	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	21	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	19	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	14	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	13	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	10	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	10	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	9	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	9	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	9	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	8	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	3	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Persimmon Creek	OK720500-01-0150G	37894	27-Jul-07	3	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	103	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	83	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	68	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	36	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	12	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	11	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	11	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	11	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	8	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	7	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	7	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	1	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Pond Creek	OK621000-05-0010D	38095	09-Aug-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	65	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	18	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	13	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	10	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	7	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	3	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	3	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	3	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	2	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	1					
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	2	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Red Rock Creek: Lower	OK621200-05-0010K	40744	06-Aug-08	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	86	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	52	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	38	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	33	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	24	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	23	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	12	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	11	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	11	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	8	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	5	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	2	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Red Rock Creek: Upper	OK621200-05-0010M	40743	06-Aug-08	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	14	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	10	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	9	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	9	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	4	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	2	Clupeidae	Dorosoma petenense	Threadfin shad	interm		1				
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	2	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Salt Creek: Payne Co.	OK620900-02-0020D	37167	21-May-07	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	132	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	94	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	31	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	29	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	11	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	10	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	10	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	9	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Salt Creek: Kingfisher Co.	OK620910-02-0100D	38749	15-Aug-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	145	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	131	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	50	Percidae	Percina phoxocephala	Slenderhead darter	intol	1					1
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	48	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	24	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	18	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	18	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	15	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	13	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	11	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	8	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			1			1
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	7	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	6	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	5	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	4	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	3	Percidae	Etheostoma spectabile	Orangethroat darter	interm	1					1
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	3	Percidae	Percina caprodes	Logperch	interm	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	2	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	2	Percichthyidae	Morone chrysops	White bass	tol			1			
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1			Hybrid, bass							
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	21	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		1				1
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	16	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	15	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	13	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	10	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	8	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	7	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	6	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	4	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	3	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	3	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Catostomidae	Ictiobus cyprinellus	Largemouth buffalo	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Percidae	Percina caprodes	Logperch	interm	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Cyprinidae	Lythrurus umbratilis	Redfin shiner	interm	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Salt Creek: Upper	OK621200-04-0010P	37170	06-Jun-07	1	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	491	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	484	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	218	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	123	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	123	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	111	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	30	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	12	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	9	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	8	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	6	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	3	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	2	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	1	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Salt Fork of Arkansas River	OK621010-01-0010D	38752	20-Aug-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	71	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	50	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	36	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	29	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	12	Ictaluridae	Ameiurus melas	Black bullhead	tol	1				1	
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Sand Creek	OK620920-05-0050J	37176	13-Jun-07	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	306	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	105	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	78	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	55	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	23	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	21	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	9	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	8	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	8	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	3	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	2	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Sandy Creek	OK621010-02-0010D	38753	21-Aug-07	1	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	100	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	31	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	17	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	16	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	16	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	13	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	13	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	10	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	10	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	8	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	5	Cyprinidae	Cyprinus carpio	Common carp	tol		1				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Skeleton Creek: Lower	OK620910-03-0010F	44268	07-Aug-09	1	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	66	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	19	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	9	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	4	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	3	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Skeleton Creek: Upper	OK620910-03-0010S	38748	14-Aug-07	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	664	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	101	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	68	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	3	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Spring Creek	OK720500-02-0100D	37888	12-Jul-07	3	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	114	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	112	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	47	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	46	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	44	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	33	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	32	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	11	Cyprinidae	Notropis buchanani	Ghost shiner	interm	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	11	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	3	Percichthyidae	Hybrid Amboplites ariommus	Hybrid, striped bass							
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	2	Cyprinidae	Macrhybopsis aestivalis	Speckled chub	intol	1					
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	2	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	1	Catostomidae	Carpiodes carpio	River carpsucker							
Stillwater Creek: Lower	OK620900-04-0040C	40746	04-Sep-08	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	53	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	3	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	2	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			1			
Stillwater Creek: Upper	OK620900-04-0070T	40740	10-Jul-08	1	Percichthyidae	Unidentified Morone spp.	Unidentified bass spp.							
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	67	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	29	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	11	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	7	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	5	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	5	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	3	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	2	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Turkey Creek: Woods Co.	OK621010-01-0230G	37889	17-Jul-07	1	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				1		1
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	342	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	180	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	114	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	82	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	28	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	27	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	18	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	17	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	16	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	15	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	14	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	11	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	11	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	10	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	5	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	3	Cyprinidae	Macrhybopsis aestivalis	Speckled chub	intol	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	3	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	1	Cyprinidae	Ctenopharyngodon idella	Grass carp or white amur	tol		1		1		
Turkey Creek: Lower	OK620910-06-0010B	38761	11-Oct-07	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	255	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	39	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	33	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	28	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	26	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	15	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	6	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	2	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Turkey Creek: Upper	OK620910-06-0010T	38762	24-Aug-07	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			1			
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	87	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	64	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	57	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	25	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	15	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	8	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	8	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	8	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	5	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Uncle John's Creek	OK620910-05-0030C	38751	16-Aug-07	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	88	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	78	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	78	Cyprinidae	Pimephales promelas	Fathead minnow	tol		1				
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	56	Cyprinidae	Hybognathus placitus	Plains minnow	tol				1		
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	28	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	26	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	23	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	22	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	15	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	9	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	5	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	1					
West Clay Creek	OK621010-01-0090R	40145	16-Jul-07	1	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	152	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	74	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	73	Centrarchidae	Pomoxis annularis	White crappie	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	54	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	45	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	35	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	32	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	31	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		1				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	VernName	Combined tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawner
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	31	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	13	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	11	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	5	Percidae	Percina caprodes	Logperch	interm	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	5	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	5	Percichthyidae	Morone chrysops	White bass	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	4	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	3	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	2	Catostomidae	Carpiodes carpio	River carpsucker	tol		1				
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Wolf Creek: Lower	OK720500-02-0030M	38755	05-Sep-07	1	Percidae	Stizostedion vitreum	Walleye	interm			1			
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	108	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	87	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	60	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	50	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	46	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	38	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	20	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	1				1	
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	18	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	10	Atherinidae	Labidesthes sicculus	Brook silverside	interm	1					
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	7	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			1		1	
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	4	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			1			
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			1			
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	1				1	
Wolf Creek: Upper	OK720500-03-0010G	38756	05-Sep-07	1	Centrarchidae	Amboplites ariommus	Shadow bass	intol	1				1	1
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	186	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		1				
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	129	Cyprinidae	Notropis stramineus	Sand shiner	interm	1					
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	47	Fundulidae	Fundulus zebrinus	Plains killifish	tol	1					
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	17	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	1					
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	15	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	1				1	
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	7	Poeciliidae	Gambusia affinis	Mosquitofish	tol	1					
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			1			
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	4	Cyprinidae	Cyprinus carpio	Common carp	tol		1				
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	1					
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		1				
Yellowstone Creek	OK621010-01-0270C	37890	17-Jul-07	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	1					

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	49	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	26	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	11	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	58	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	23	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	14	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Arigomphus
riffle	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	96	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Wolf Creek: Lower	OK720500-02-0030M	38103	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	52	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	23	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia
riffle	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	73	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	3	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma
riffle	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	76	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	30	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	24	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	20	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	88	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	21	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	42	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	38	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	59	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	49	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	3	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia
riffle	Bois d'Arc Creek	OK621000-03-0010C	38130	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	62	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	35	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Deer Creek	OK621000-04-0010D	38132	15-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	64	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Gray Horse Creek	OK621200-01-0400C	38155	15-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Lagoon Creek	OK620900-01-0180J	38156	16-Aug-07	108	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Lagoon Creek	OK620900-01-0180J	38156	16-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Lagoon Creek	OK620900-01-0180J	38156	16-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Lagoon Creek	OK620900-01-0180J	38156	16-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
riffle	Lagoon Creek	OK620900-01-0180J	38156	16-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	80	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Council Creek	OK620900-02-0050H	38158	16-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	36	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	21	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	10	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Salt Creek: Lower	OK621200-04-0010F	38768	19-Sep-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	74	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	23	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	3	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Upper	OK621200-04-0010P	39204	23-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	58	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	38	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	36	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	17	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	3	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Diamesinae
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	COELENTERATA	Hydrozoa	Hydroida	Hydridae	Hydra
riffle	Wolf Creek: Lower	OK720500-02-0030M	39335	10-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	112	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	100	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	28	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Kingfisher Creek	OK620910-05-0010J	39342	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	139	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	23	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Cooper Creek	OK620910-02-0040C	39343	15-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Griever Creek	OK620920-01-0130G	39346	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	37	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	17	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	16	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	2	ARTHROPODA	Acari	Arcarina	Lebertiidae	Lebertia
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Otter Creek	OK620910-03-0040C	39359	11-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	50	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	14	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	12	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	4	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	2	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
riffle	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	82	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	36	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Turkey Creek	OK621010-01-0230G	39363	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	73	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	48	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	14	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	96	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	13	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	9	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	4	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	146	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	126	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	35	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	12	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma
riffle	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ephydridae	Ephydra
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	148	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	9	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	8	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	7	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	79	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Stillwater Creek: Lower	OK620900-04-0040C	39369	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	58	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	11	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	ANNELIDA	Hirudinea			
riffle	Skeleton Creek: Lower	OK620910-03-0010F	39370	17-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	137	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	30	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Red Rock Creek: Upper	OK621200-05-0010M	39371	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	78	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	14	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
riffle	Red Rock Creek: Lower	OK621200-05-0010K	39372	29-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	49	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	19	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	12	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	31	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	22	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	22	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	9	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	104	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	8	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Beaver Creek	OK621210-00-0050L	39384	23-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	33	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	5	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	4	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Chilocco Creek	OK621210-00-0270C	39385	23-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	74	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	6	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	39387	04-Feb-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	99	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	3	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Chickaskia River: Lower	OK621100-00-0010B	39388	04-Feb-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	94	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	5	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Deer Creek	OK621000-04-0010D	39389	04-Feb-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	4	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Isoperla
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Agnetina=Phasgan
riffle	Chickaskia River: Upper	OK621100-00-0010M	39390	04-Feb-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	72	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Acari	Arcarina	Hygrobatidae	Atractides
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Council Creek	OK620900-02-0050H	39393	03-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	31	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	27	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	11	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	6	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Salt Creek	OK620900-02-0020D	39394	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	40	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	33	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	11	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	10	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	53	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	38	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	62	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	13	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Gyraulus
riffle	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	33	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	9	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	5	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Isoperla
riffle	Salt Creek: Lower	OK621200-04-0010F	39399	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	27	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	2	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	68	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	78	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Clinocera
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Turkey Creek	OK621010-01-0230G	40001	07-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	80	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	48	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	27	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Ancylidae	Ferrissia
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
riffle	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	144	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	16	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	15	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	13	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	6	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	4	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	1	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Wolf Creek: Lower	OK720500-02-0030M	40891	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	3	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	10	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	8	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
riffle	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	13	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	5	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	5	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Griever Creek	OK620920-01-0130G	40899	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	47	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	35	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	26	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Gray Horse Creek	OK621200-01-0400C	40945	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	57	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	41	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	16	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Lower	OK621200-04-0010F	40947	22-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	51	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	18	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	9	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	4	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
riffle	Salt Creek: Upper	OK621200-04-0010P	40948	22-Jul-08	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	17	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	7	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	6	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	5	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	4	ARTHROPODA	Insecta	Odonata	Libellulidae	Brechmorhoga
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Lymnaea
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Persimmon Creek	OK720500-01-0150G	41035	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	100	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	58	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	39	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	67	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	66	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	33	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	31	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	30	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	15	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	62	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Acari	Arcarina	Hygrobatidae	Atractides

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	43	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	43	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	5	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	81	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Arigomphus
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Lagoon Creek	OK620900-01-0180J	41688	21-Aug-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	84	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	24	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	17	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Ceraclea
riffle	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	40	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	6	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	51	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	26	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	25	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Dugout Creek	OK620900-03-0080C	42604	08-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	67	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	48	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	24	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
riffle	Salt Fork of Arkansas River	OK621010-01-0010D	42605	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	63	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	45	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	39	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	30	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	10	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
riffle	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	29	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	17	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Acari	Arcarina	Hygrobatidae	Atractides
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	45	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	14	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	4	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	3	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
riffle	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	16	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	11	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Ceraclea
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Beaver Creek	OK620900-03-0230C	42613	05-Aug-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	22	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	9	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
riffle	Black Bear Creek: Upper	OK621200-03-0010W	42614	14-Aug-08	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Psychoda
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	104	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	26	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	18	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	38	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	26	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	7	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Black Bear Creek: Lower	OK621200-03-0010M	42616	14-Aug-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	52	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
riffle	Stillwater Creek: Lower	OK620900-04-0040C	42617	14-Aug-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	89	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	31	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	25	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	10	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	7	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	3	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	2	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Kingfisher Creek	OK620910-05-0010J	43241	14-Jan-09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	97	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	2	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
riffle	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	65	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	11	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	8	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	6	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	22	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	16	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	2	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	106	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	1	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Lagoon Creek	OK620900-01-0180J	43278	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	60	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
riffle	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	31	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	16	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	6	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Odontomyia
veg	Palo Duro Creek	OK720500-02-0500G	37725	09-Jul-07	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	40	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	23	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	9	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Ischnura
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Cimarron River	OK620930-00-0010T	37727	09-Jul-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	30	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	17	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	8	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	11	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	10	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	8	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Neuroptera	Sisyridae	Climacia
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Kiowa Creek	OK720500-02-0130M	38086	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	36	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	22	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	12	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	3	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	3	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Pisidium
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	2	ARTHROPODA	Crustacea	Decapoda	Astacidae	
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
veg	Duck Pond Creek	OK720500-02-0250F	38087	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Odontomyia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	27	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	21	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	12	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	12	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	9	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Crustacea	Decapoda	Astacidae	
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	38088	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	47	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	24	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	11	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK620930-00-0100G	38089	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	40	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	4	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Spring Creek	OK720500-02-0100D	38090	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Anax
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	43	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	8	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Clear Creek	OK720500-02-0070G	38091	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	30	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	6	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	6	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
veg	Otter Creek	OK720500-02-0050B	38092	02-Aug-07	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	29	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	16	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Lymnaea
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	43	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	29	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	88	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Griever Creek	OK620920-01-0130G	38105	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	38	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	6	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Sand Creek	OK620920-05-0050J	38106	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Libellulidae	Libellula
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	24	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	16	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Euparyphus
veg	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	25	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	15	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	15	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	14	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	8	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	5	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Boyeria
veg	Long Creek	OK620920-02-0080D	38109	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
veg	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Oxyethira
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	10	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ephydridae	Hydrellia
veg	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	77	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	24	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	68	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia
veg	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Palo Duro Creek	OK720500-02-0500G	39119	07-Jan-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Palo Duro Creek	OK720500-02-0500G	39119	07-Jan-08	6	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Palo Duro Creek	OK720500-02-0500G	39119	07-Jan-08	3	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Palo Duro Creek	OK720500-02-0500G	39119	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Clear Creek	OK720500-02-0300F	39120	07-Jan-08	26	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Clear Creek	OK720500-02-0300F	39120	07-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Clear Creek	OK720500-02-0300F	39120	07-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	24	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	6	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Duck Pond Creek	OK720500-02-0250F	39121	07-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	103	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	22	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	7	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Cimarron River	OK620930-00-0010T	39122	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	127	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	21	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	13	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Crooked Creek	OK620930-00-0100G	39123	07-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	96	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	7	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
veg	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	3	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	2	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Spring Creek	OK720500-02-0100D	39328	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Diamesinae
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	39329	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	8	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	4	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	ARTHROPODA	Acari	Arcarina	Hygrobatidae	Atractides
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebia
veg	Clear Creek	OK720500-02-0070G	39330	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Otter Creek	OK720500-02-0050B	39331	14-Jan-08	115	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Otter Creek	OK720500-02-0050B	39331	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Otter Creek	OK720500-02-0050B	39331	14-Jan-08	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
veg	Otter Creek	OK720500-02-0050B	39331	14-Jan-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	36	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	26	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	14	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	14	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	8	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero
veg	Buffalo Creek: Upper	OK620920-05-0010P	39337	10-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	63	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	18	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	147	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	8	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	4	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia
veg	Long Creek	OK620920-02-0080D	39339	10-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	18	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Main Creek	OK620920-01-0180F	39347	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	34	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	7	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
veg	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	22	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	18	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	11	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	3	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	3	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	118	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	111	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	10	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
veg	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	97	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	19	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	34	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Arigomphus
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis
veg	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Ephemeridae	Hexagenia
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
veg	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	52	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	16	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	15	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	13	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	7	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Yellowstone Creek	OK621010-01-0270C	39364	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	163	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	41	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	31	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	17	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	15	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	3	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
veg	West Clay Creek	OK621010-01-0090R	39366	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	22	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	6	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
veg	Crooked Creek	OK621000-06-0010C	39367	15-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	17	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	17	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Lagoon Creek	OK620900-01-0180J	39395	03-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Eagle Chief Creek: Upper	OK620920-04-0010G	39997	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	73	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
veg	West Clay Creek	OK621010-01-0090R	39998	02-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	64	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Crooked Creek	OK621000-06-0010C	39999	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	16	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	15	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	Neochoroterpes
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Brachycercus
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Yellowstone Creek	OK621010-01-0270C	40000	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	40	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
veg	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	51	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	33	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	23	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
veg	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	91	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	13	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Red Rock Creek: Lower	OK621200-05-0010K	40006	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	44	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	38	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	86	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	35	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Salt Fork of Arkansas River	OK621010-01-0010D	40009	15-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	36	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidius

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	
veg	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	43	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	15	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	4	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Odontomyia
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Ischnura
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Duck Pond Creek	OK720500-02-0250F	40882	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	99	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Cimarron River	OK620930-00-0010T	40884	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	73	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	26	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	12	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	11	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	2	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	1	ARTHROPODA	Acari	Arcarina	Hydrachnidae	Hydrachna

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Crooked Creek	OK620930-00-0100G	40885	15-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	12	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	10	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	7	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	5	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Ancylidae	Ferrissia
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
veg	Kiowa Creek: Harper Co.	OK720500-02-0130C	40886	15-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	34	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	11	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	4	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Pisidium
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	2	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	ARTHROPODA	Acari	Arcarina	Lebertiidae	Lebertia
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Spring Creek	OK720500-02-0100D	40887	15-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	6	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Clear Creek	OK720500-02-0070G	40888	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	67	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	13	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	9	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	8	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	4	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	2	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ARTHROPODA	Acari	Arcarina	Eremaeidae	Hydrozetes
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Otter Creek	OK720500-02-0050B	40889	15-Jul-08	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Odontomyia
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	8	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	80	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	7	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Euparyphus
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Buffalo Creek: Upper	OK620920-05-0010P	40893	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	10	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	8	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Buffalo Creek: Lower	OK620920-05-0010G	40894	16-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	7	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Main Creek	OK620920-01-0180F	40900	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	11	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	10	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	7	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	6	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Ephemeridae	Hexagenia
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
veg	Indian Creek	OK720500-01-0200D	41036	31-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	71	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Sand Creek	OK620920-05-0050J	41037	31-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	47	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	15	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Brachycercus
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	38	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	27	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	7	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ephydridae	Hydrellia
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
veg	Indian Creek	OK620910-02-0310C	41665	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Arigomphus
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
veg	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
veg	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	West Clay Creek	OK621010-01-0090R	42608	30-Jul-08	64	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	West Clay Creek	OK621010-01-0090R	42608	30-Jul-08	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
veg	West Clay Creek	OK621010-01-0090R	42608	30-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	West Clay Creek	OK621010-01-0090R	42608	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
veg	West Clay Creek	OK621010-01-0090R	42608	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	48	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	11	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
veg	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	113	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Deep Creek	OK620910-02-0250C	43237	13-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	97	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	13	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Ephydridae	Hydrellia
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
veg	Dead Indian Creek	OK620910-05-0080D	43240	14-Jan-09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	110	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	6	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
veg	Cooper Creek	OK620910-02-0040C	43242	14-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	40	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	37	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	15	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	3	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
woody	Persimmon Creek	OK720500-01-0150G	37994	06-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	42	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	32	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	9	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bent Creek	OK720500-01-0070D	38100	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	24	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	12	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Indian Creek	OK720500-01-0200D	38101	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	39	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Brachycercus
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Wolf Creek: Upper	OK720500-03-0010G	38102	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	50	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	13	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Main Creek	OK620920-01-0180F	38104	01-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	10	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	
woody	Buffalo Creek: Upper	OK620920-05-0010P	38107	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	71	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	4	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
woody	Buffalo Creek: Lower	OK620920-05-0010G	38108	02-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	40	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Salt Creek	OK620910-02-0100D	38110	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	86	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	15	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
woody	Deep Creek	OK620910-02-0250C	38111	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Acari	Arcarina	Sperchonidae	Sperchon
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Indian Creek	OK620910-02-0310C	38112	13-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	50	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	18	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Anthomyiidae	Limnophora
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	38113	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	63	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Chauliodes
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Turkey Creek: Upper	OK620910-06-0010T	38114	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Skeleton Creek: Upper	OK620910-03-0010S	38115	13-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Polycentropus
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	55	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Uncle John's Creek	OK620910-05-0030C	38116	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	77	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Basiaeschna
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Dead Indian Creek	OK620910-05-0080D	38117	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	87	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Kingfisher Creek	OK620910-05-0010J	38118	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	85	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Cooper Creek	OK620910-02-0040C	38119	14-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	101	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Kiowa Creek	OK720500-02-0130M	39127	08-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	70	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	20	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Wolf Creek: Upper	OK720500-03-0010G	39334	10-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	92	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	10	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	9	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Buffalo Creek: Lower	OK620920-05-0010G	39338	10-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	20	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Uncle John's Creek	OK620910-05-0030C	39340	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	92	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Dead Indian Creek	OK620910-05-0080D	39341	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	12	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Skeleton Creek: Upper	OK620910-03-0010S	39345	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	89	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	10	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Limnephilidae	Limnephilus
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Main Creek	OK620920-01-0180F	39347	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	97	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Indian Creek	OK720500-01-0200D	39348	14-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	9	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
woody	Persimmon Creek	OK720500-01-0150G	39349	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	98	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Crustacea	Decapoda	Astacidae	
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
woody	Bent Creek	OK720500-01-0070D	39350	14-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	87	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Deep Creek	OK620910-02-0250C	39351	17-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	106	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Indian Creek	OK620910-02-0310C	39352	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	99	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	39353	17-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	205	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	82	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	46	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	6	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Acari	Arcarina		
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus
woody	Turkey Creek: Upper	OK620910-06-0010T	39354	17-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Salt Creek	OK620910-02-0100D	39355	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	5	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Diptera	Ephydridae	Hydrellia
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Cottonwood Creek	OK620910-04-0010D	39357	11-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	8	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Dugout Creek	OK620900-03-0080C	39358	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	60	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	13	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Stillwater Creek: Upper	OK620900-04-0070T	39360	11-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	48	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	10	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	3	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Medicine Lodge River	OK621010-03-0010D	39361	14-Jan-08	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Isoperla
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	24	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Driftwood Creek	OK621010-03-0030C	39362	14-Jan-08	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	73	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	4	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	39365	15-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	42	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	18	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Pond Creek	OK621000-05-0010D	39368	15-Jan-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Black Bear Creek: Lower	OK621200-03-0010M	39373	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	54	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Black Bear Creek: Upper	OK621200-03-0010W	39374	29-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	38	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	16	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
woody	Black Bear Creek: Lower	OK621200-03-0010D	39396	07-Jan-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Gray Horse Creek	OK621200-01-0400C	39397	07-Jan-08	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	26	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Black Bear Creek: Upper	OK621200-03-0010W	39995	25-Jul-07	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	84	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Driftwood Creek	OK621010-03-0030C	39996	23-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	75	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Dugout Creek	OK620900-03-0080C	40002	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	18	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Stillwater Creek: Upper	OK620900-04-0070T	40003	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	31	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Otter Creek	OK620910-03-0040C	40004	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Glossoscolecidae	Sparganophilus
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
woody	Cottonwood Creek	OK620910-04-0010D	40005	13-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Red Rock Creek: Upper	OK621200-05-0010M	40007	14-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	50	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	38	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Anthomyiidae	Limnophora
woody	Pond Creek	OK621000-05-0010D	40008	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	50	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidius
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia
woody	Sandy Creek	OK621010-02-0010D	40010	15-Aug-07	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Medicine Lodge River	OK621010-03-0010D	40011	15-Aug-07	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	27	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	10	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	9	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	5	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Kiowa Creek	OK720500-02-0130M	40881	15-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	68	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	36	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	19	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	8	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
woody	Wolf Creek: Upper	OK720500-03-0010G	40890	16-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	35	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	16	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	3	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Bent Creek	OK720500-01-0070D	40898	16-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Salt Creek	OK620910-02-0100D	41663	02-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Deep Creek	OK620910-02-0250C	41664	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	34	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Lymnaea

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Eagle Chief Creek: Lower	OK620920-04-0010C	41666	02-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	90	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Turkey Creek: Upper	OK620910-06-0010T	41667	02-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Centroptilum
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	69	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	8	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	1	ARTHROPODA	Acari	Arcarina	Lebertiidae	Lebertia
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Uncle John's Creek	OK620910-05-0030C	41669	03-Jul-08	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	83	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
woody	Dead Indian Creek	OK620910-05-0080D	41670	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	34	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	25	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Kingfisher Creek	OK620910-05-0010J	41671	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	74	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	26	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	8	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Cooper Creek	OK620910-02-0040C	41672	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	66	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	3	ARTHROPODA	Insecta	Diptera	Ephydridae	Hydrellia
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Turkey Creek: Lower	OK620910-06-0010B	41673	03-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Deer Creek	OK621000-04-0010D	41675	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	10	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
woody	Bois d'Arc Creek	OK621000-03-0010C	41677	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	40	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	11	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
woody	Chilocco Creek	OK621210-00-0270C	41678	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	37	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Neotrichia
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
woody	Bitter Creek	OK621100-00-0100G	41679	30-Jul-08	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Council Creek	OK620900-02-0050H	41686	21-Aug-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	32	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Salt Creek	OK620900-02-0020D	41687	21-Aug-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	62	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Black Bear Creek: Lower	OK621200-03-0010D	41689	21-Aug-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	77	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Otter Creek	OK620910-03-0040C	42601	08-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	45	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Red Rock Creek: Upper	OK621200-05-0010M	42602	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Stillwater Creek: Upper	OK620900-04-0070T	42603	08-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche
woody	Medicine Lodge River	OK621010-03-0010D	42606	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Driftwood Creek	OK621010-03-0030C	42607	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	78	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Eagle Chief Creek: Upper	OK620920-04-0010G	42609	30-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	21	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Crooked Creek	OK621000-06-0010C	42610	31-Jul-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	52	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Pond Creek	OK621000-05-0010D	42611	31-Jul-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	38	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	15	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Cottonwood Creek	OK620910-04-0010D	42612	05-Aug-08	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	62	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	32	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	3	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Red Rock Creek: Lower	OK621200-05-0010K	42615	14-Aug-08	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	46	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Skeleton Creek: Upper	OK620910-03-0010S	43233	13-Jan-09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	37	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
woody	Turkey Creek: Upper	OK620910-06-0010T	43234	13-Jan-09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	115	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Uncle John's Creek	OK620910-05-0030C	43239	14-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	64	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	40	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	12	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Turkey Creek: Lower	OK620910-06-0010B	43243	14-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	66	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	26	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Deer Creek	OK621000-04-0010D	43244	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	70	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura
woody	Bois d'Arc Creek	OK621000-03-0010C	43246	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	63	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	2	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cyrnellus
woody	Chilocco Creek	OK621210-00-0270C	43247	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	91	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Bitter Creek	OK621100-00-0100G	43248	21-Jan-09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	16	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche

Appendix C. Macroinvertebrate collection data.

Sample type	Sitename	WBID	Sample ID	Date	Number	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Council Creek	OK620900-02-0050H	43276	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	47	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	15	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
woody	Black Bear Creek: Lower	OK621200-03-0010D	43279	21-Jan-09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon