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April 8, 2010

Ken Marcy, Task Monitor
United States Environmental Protection Agency
1200 Sixth Avenue, Mail Stop ECL-112
Seattle, Washington 98101

Re: Contract Number: EP-S7-06-02
Technical Direction Document Number: 07-05-0014
Final Big Wood River Site Inspection Report

Dear Mr. Marcy:

Enclosed please find the final *Big Wood River Site Inspection* report, which is located in Blaine County, Idaho. If you have any questions regarding this submittal, please call me at (206) 624-9537.

Sincerely,
ECOLOGY AND ENVIRONMENT, INC.

Linda E. Costello

Linda E. Costello
START-3 Project Leader

cc: Renee Nordeen, START-3 Project Manager, E & E, Seattle, Washington

Big Wood River
Site Inspection

Blaine County, Idaho

Technical Direction Document Number: 07-05-0014

April 2010

Prepared for:
1200 Sixth Avenue
Seattle, Washington 98101

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
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List of Abbreviations and Acronyms

%R	percent recovery
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRQL	Contract Required Detection Limit
DQO	Data Quality Objective
E & E	Ecology & Environment Inc.
EPA	United States Environmental Protection Agency
GPS	Global Positioning Unit
IDEQ	Idaho Department of Environmental Quality
IDW	Investigation-derived waste
MS	matrix spike
mS/cm	milliSiemens per centimeter
PPE	probable point of entry
QA/QC	quality assurance/quality control
RPD	relative percent difference
SI	site inspection
SPAF	Sample Plan Alteration Form
SQL	sample quantitation limit
SSSP	Site-Specific Sampling Plan
START	Superfund Technical Assessment and Response Team
TAL	Target Analyte List
TDL	target distance limit
TM	Task Monitor

1 Introduction

Ecology and Environment, Inc., (E & E) was tasked by the United States Environmental Protection Agency (EPA) to provide technical support for completion of a Site Inspection (SI) on the Big Wood River located in Blaine County, Idaho. E & E completed SI activities under Technical Direction Document Number 07-05-0014, issued under EPA, Region 10, Superfund Technical Assessment and Response Team (START)-3 Contract Number EP-S7-06-02.

The specific goals for the Big Wood River SI, identified by the EPA, are:

- Determine the potential threat to public health or the environment posed by the site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the potential for placement of the site on the National Priorities List.

Completion of the SI included reviewing existing site information, determining regional characteristics, collecting receptor information within the range of site influence, executing a sampling plan, and producing this report. The report is organized as follows:

- Section 1, Introduction – Authority for performance of this work, goals for the project, and summary of the report contents;
- Section 2, Background – Site description, site operations and waste characteristics, and a summary of investigation locations;
- Section 3, Field Activities and Analytical Protocol – Summary of the field effort;
- Section 4, Quality Assurance/Quality Control (QA/QC) – Summary of the laboratory data;
- Section 5, Analytical Results Reporting and Background Samples - Discussion of results reporting criteria and background sample locations and analytical results;
- Section 6, Surface Water Migration Pathway and Targets – Discussion of the surface water migration pathway, targets, sample locations, and analytical results;
- Section 7, Summary and Conclusions – Summary of the investigation and recommendation for the site based on the information gathered during the investigation;
- Section 8, References – Alphabetical listing of the references cited throughout the text;

- Appendix A, Sample Plan Alteration Form – A description and justification for deviations from the approved sampling plan.
- Appendix B, Field Sample Collection Data Sheets – Data sheets used to record individual sample descriptions and general locations.
- Appendix C, Photographic Documentation – Photographs taken during the sampling event;
- Appendix D, Global Positioning System (GPS) Coordinate – Latitude and longitude coordinates of sample locations.
- Appendix E, Chain-of-Custody Forms – Forms documenting sample chain-of-custody for the sampling event;
- Appendix F, Data Validation Memoranda – Laboratory results and quality assurance evaluation for all samples; and
- Appendix G, Analytical Results Summary Tables for the Big Wood River and its Tributaries

2 Site Background

This section describes the background of the site including location, description, operations and source characteristics, previous investigations, and a summary of the site investigation locations.

2.1 Site Location

Site Name:	Big Wood River
CERCLIS ID Number:	To be determined
Latitude:	Northern Boundary: 43° 38' 51.04" North Southern Boundary: 43° 26' 44.71" North
Longitude:	Northern Boundary: 114° 20' 34.51" West Southern Boundary: 114° 15' 37.04" West
Legal Description:	Northern Boundary: Township: 4 North Range: 17 East Section: 13 Southern Boundary: Township: 1 North Range: 18 East Section: 1
County:	Blaine
Congressional District:	2

2.2 Site Description

The Big Wood River is located in the south central portion of Idaho in the Big Wood River Valley (Figure 2-1). The portion of this river that is the focus of this SI begins at the confluence of Warm Springs Creek with the Big Wood River at the northern boundary and concludes at the confluence of Townsend Gulch with the Big Wood River at the southern boundary (Figure 2-2). Sixteen tributaries to the Big Wood River (Colorado Gulch, Clear Creek, Croy Creek, Deer Creek, East Fork Big Wood River, Elkhorn Gulch, Greenhorn Gulch, Independence Creek, Lees Gulch, Mammoth Gulch, Minnie Moore Gulch, Parker Gulch, Star Gulch, Townsend Gulch, Trail Creek, and Warm Springs Creek) were the targets of this investigation. This investigation was designed to determine whether contamination from mining activities in areas drained by tributaries to the Big Wood River is impacting downstream resources such as fisheries and sensitive environments.

2.3 Site Operations and Source Characteristics

Mining has historically occurred in areas drained by tributaries that feed the Big Wood River. Contamination from mining and/or milling activities may be migrating downstream into the Big Wood River. Contaminants of concern from these activities are target analyte list (TAL) metals including mercury.

2.4 Previous Investigations

In 2006, EPA and the Idaho Department of Environmental Quality (IDEQ) conducted a joint investigation of mine sites and the surface water pathway within the Croy Creek Watershed (which is a tributary of the Big Wood River). During this investigation, six co-located surface water/sediment sample sets were collected from the Big Wood River downstream of the confluence with Croy Creek. Analytical results of the surface water samples did not indicate the presence of TAL metals at elevated concentrations with respect to background concentrations (Table 2-1). Analytical results for the sediment samples indicated the presence of arsenic at an elevated concentration with respect to background concentrations in one of the samples (Table 2-2). Limited samples were collected on the Big Wood River during this investigation. (E & E 2007)

The IDEQ completed a Watershed Management Plan for the Big Wood River in 2002. The Big Wood River is listed under the Clean Water Act as a 303(d) water body. Water quality pollutants of concern on the Main Stem of the Big Wood River include: suspended sediments, substrate sediments, total phosphorus, and pathogens (*Escherichia coli*) (IDEQ 2008).

2.5 Summary of SI Investigation Locations

Sampling under the Big Wood River SI was conducted at targets that may be impacted by sources of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) –regulated substances. The features identified for inspection under the Big Wood River SI were determined based on a review of background information. These features are discussed below:

Targets:

- The Big Wood River is known to be used for sport fishing and this river contains several miles of wetlands. These targets may have been impacted by mining efforts in the area. This investigation was designed to assist in determining whether these targets are being impacted. The primary contaminants of concern are heavy metals.

Table 2-1 Big Wood River and Tributaries Surface Water Samples Analytical Results Summary

EPA Sample ID	06284059	06284072	06284076	06284061	06284070	06284074	06284078	06284080
Station Location	BW01SW	CO01SW	MG01SW	BW02SW	BW03SW	BW04SW	BW05SW	BW06SW
CLP Sample ID	MJ7560	MJ7573	MJ7577	MJ7562	MJ7571	MJ7575	MJ7579	MJ7581
Description	Background	Colorado Gulch	Mammoth Gulch					
TAL Metals (µg/L)								
Arsenic	10.0 U	**<u>20.5</u>**	7.6 JQ	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Calcium	**32100**	**56700**	**74000**	**32400**	**30600**	**30300**	**47500**	**44500**
Iron	74.9 JQ	**186**	100 U	67.5 JQ	87.8 JQ	79.5 JQ	26.9 JQ	39.5 JQ
Magnesium	**6940**	**13000**	**11900**	**6900**	**6650**	**6630**	**10600**	**9690**
Sodium	2820 JQ	**5540**	**6460**	3050 JQ	2760 JQ	4050 JQ	**5730**	4970 JQ

Note: Bold type indicates the sample result is above the instrument detection limit.
Underline type indicates the sample result is elevated as defined in Section 5.

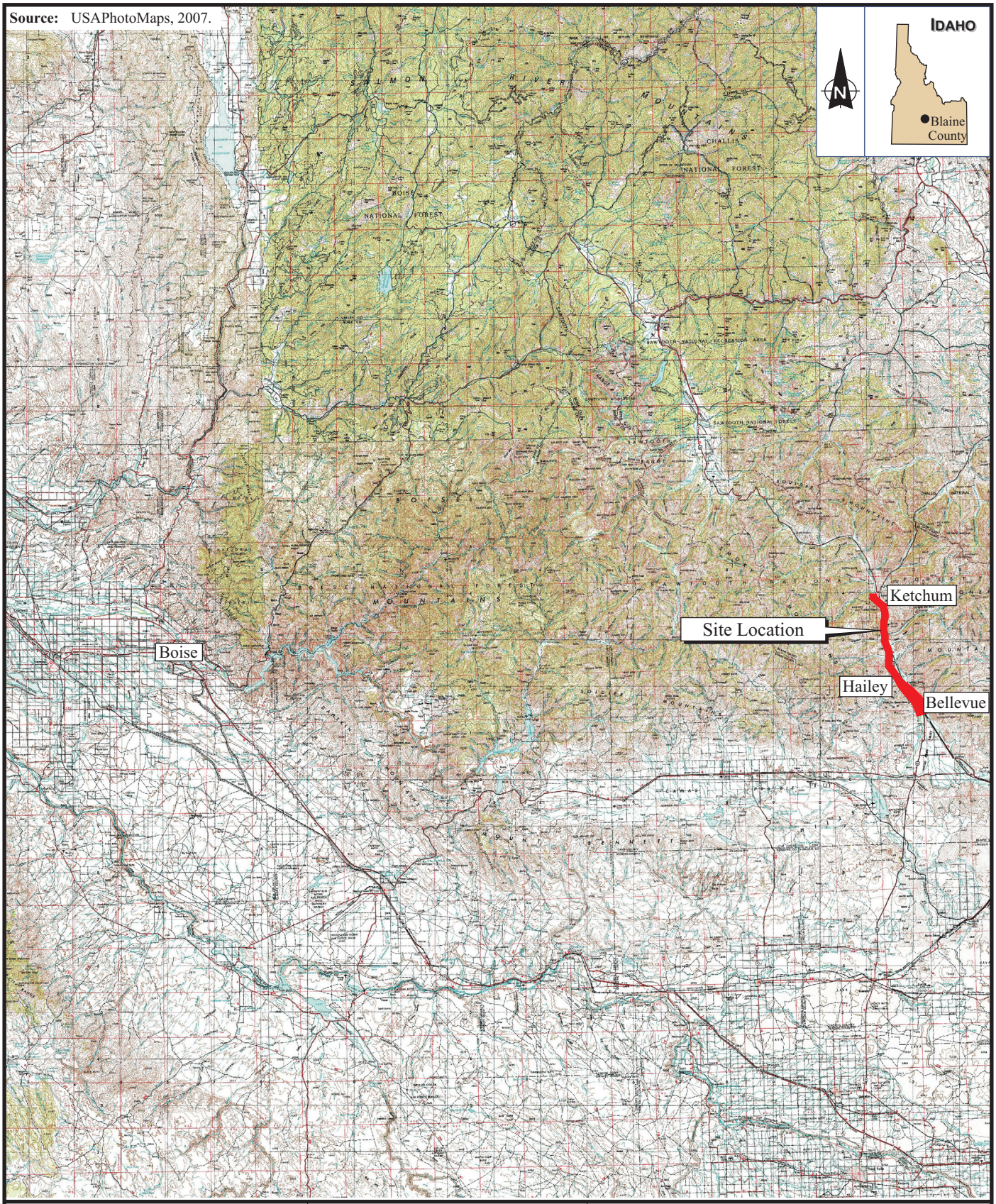
Key:
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The associated value is an estimated quantity.
µg/L = micrograms per liter.
Q = The detected concentration is below the method reporting limit/contract required quantitation limit, but is above the method quantitation limit.
TAL = Target Analyte List.
U = The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the SQL or the sample detection limit.

Table 2-2 Big Wood River and Tributaries Sediment Sample Results

EPA Sample ID	06284060	06284073	06284077	06284062	06284071	06284075	06284079	06284081
Station Location	BW01SD	CO01SD	MG01SD	BW02SD	BW03SD	BW04SD	BW05SD	BW06SD
CLP Sample ID	MJ7561	MJ7574	MJ7578	MJ7563	MJ7572	MJ7576	MJ7580	MJ7582
Description	Background	Colorado Gulch	Mammoth Gulch					
TAL Metals (mg/kg)								
Aluminum	**3840**	**7140**	**9020**	**3880**	**3860**	**5280**	**3600**	**3190**
Arsenic	**4.7**	**31.8**	**27.7**	**4.7**	**4.5**	**4.6**	**70.8**	**4.0**
Barium	**88.7**	**76.7**	**122**	**58.4**	**82.1**	**147**	**64.9**	**35.5**
Beryllium	0.17 JQ (0.61 SQL)	0.18 JQ	**0.82**	0.21 JQ	0.18 JQ	0.29 JQ	0.22 JQ	0.13 JQ
Cadmium	0.61 U	0.51 JQ	**2.9**	0.51 U	0.65 U	0.74 U	0.64 U	0.49 JQ
Calcium	**6150**	**5380**	**9920**	**4650**	**4330**	**6610**	**7350**	**2700**
Chromium	**15.7**	**25.1**	**22.8**	**13.9**	**15.0**	**17.6**	**14.0**	**15.0**
Copper	**7.0**	**14.4**	**23.6**	**9.0**	**8.0**	**10.5**	**10.1**	**5.4**
Iron	**8280**	**14200**	**17100**	**7690**	**7810**	**9530**	**12900**	**6270**
Lead	**12.5 JL**	**22.3 JL**	**26.8 JL**	**12.5 JL**	**12.7 JL**	**23.7 JL**	**25.8 JL**	**25.4 JL**
Magnesium	**2900 JL**	**4530 JL**	**4920 JL**	**3360**	**3190 JL**	**4140 JL**	**3110 JL**	**2730 JL**
Manganese	**103**	**190**	**281**	**132**	**99.7**	**131**	**289**	**102**
Nickel	**12.6**	**16.9**	**30.3**	**12.7**	**12.7**	**15.8**	**18.2**	**10.3**
Potassium	441 JQ	**2630 JH**	**2810 JH**	**534 JH**	501 JQ	**761 JH**	448 JQ	441 JQ
Vanadium	**17.1**	**46.8**	**69.4**	**18.1**	**16.9**	**21.3**	**14.2**	**16.4**
Zinc	**59.6**	**193**	**227**	**52.0**	**53.6**	**92.4**	**92.5**	**117**

Note: Bold type indicates the sample result is above the instrument detection limit.
Underline type indicates the sample result is elevated as defined in Section 5.

Key:
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
H = High bias.
J = The associated value is an estimated quantity.
L = Low bias.
mg/kg = millgrams per kilogram.
Q = The detected concentration is below the method reporting limit/contract required quantitation limit, but is above the method quantitation limit.
SQL = Sample quantitation limit.
TAL = Target Analyte List.
U = The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the SQL or the sample detection limit.



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BIG WOOD RIVER SITE INVESTIGATION Blaine County, Idaho	Figure 2-1 SITE VICINITY MAP
		Date: 1-15-09 / Drawn by: AES / 10:START-3\07050014\fig 2-1

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Source: Maptech, Inc. 2001.

IDAHO

Blaine County

Northern Boundary

Trail Creek

Warm Springs Creek

Elkhorn Gulch

East Fork Big Wood River

Ohio Gulch

Greenhorn Creek

Indian Creek

Deer Creek

Quigley Creek

Slaughterhouse Creek

Water Gulch

Colorado Gulch

Star Gulch

Mammoth Gulch

Croy Creek

Minnie Moore Gulch

Southern Boundary

Townsend Gulch

ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BIG WOOD RIVER SITE INVESTIGATION Blaine County, Idaho	Figure 2-2 SITE MAP		
	0 .75 1.5 Approximate Scale in Miles	Date: 1/15/09	Drawn by: AES	10:START-3\07050014\fig 2-2

3 Field Activities and Analytical Protocol

A site-specific sampling plan (SSSP) for the Big Wood River SI was developed by the START prior to field sampling (E & E 2008). The SSSP describes the sampling strategy, sampling methodology, and analytical program used to investigate potential targets. With few exceptions the SI field activities were conducted in accordance with the approved SSSP. Deviations from the SSSP are described, when applicable, in this section and in the sampling location discussion in Section 6 (target areas). All deviations to this SSSP were pre-approved by the EPA Task Monitor (TM) during the field sampling event and were recorded on a Sample Plan Alternation Form (SPAF) as presented as Appendix A.

The SI field sampling event was conducted from June 16, 2008 through June 19, 2008. A total of 109 samples, including five background surface water samples and five background sediment samples were collected for the SI. Sample types and methods of collection are described below. A list of all samples collected for laboratory analysis under this SI is contained in Table 3-1. During sampling, the field team used sample collection data sheets to record sample descriptions and to sketch the general location of each sample. Field sample collection data sheets are provided as Appendix B. Photographic documentation of SI field activities is included as Appendix C.

Alphanumeric identification numbers applied by the START to each sample location (e.g., BR01) are used in the report as the sample location identifiers. Sample locations are provided in Figure 3-1.

This section describes sampling methodology, analytical protocol, global positions system, and investigation-derived waste.

3.1 Sampling Methodology

Grass leaves and other vegetative material, rocks, and other debris unsuitable for analysis were removed from samples before being placed into sample containers. Samples were stored on ice in coolers continuously maintained under the custody of START personnel. Sampling methods used for each sample type are described below.

3.1.1 Surface Water Sampling

Surface water samples were collected by directly dipping a 1-liter polyethylene sample container directly into the water. Water quality parameters for pH,

dissolved oxygen, turbidity, salinity, temperature, and conductivity were collected prior to sample collection. Samples were preserved with nitric acid following sample collection. At co-located sample locations, the surface water sample was collected prior to collection of the sediment sample to avoid the possibility of contaminating the surface water sample with suspended sediment.

3.1.2 Sediment Sampling

Sediment samples were collected using dedicated plastic scoops. The sample material was placed in a dedicated plastic bowl, thoroughly homogenized, and placed in prelabeled sample containers.

3.2 Analytical Protocol

Analytical protocols applied to the SI samples included off-site fixed laboratory analysis of TAL metals including mercury (EPA CLP SOW ILM05.4). Analyses applied to the samples are presented in Table 3-1. All analyses were performed by Bonner Analytical located in Hattiesburg, Mississippi. Additionally, the field team collected water quality measurements at the time of sampling using a Horiba™ water quality meter. The following water quality measurements were collected and recorded on field sample data sheets: temperature, pH, conductivity, dissolved oxygen, turbidity, and salinity.

3.3 Global Positioning System

Trimble GeoXH mapping grade Global Positioning System (GPS) units were used by START personnel to approximate the sample location coordinates of the Big Wood River SI. The recorded GPS sample location coordinates by sample point are listed in Appendix D.

3.4 Investigation-Derived Waste

Investigation-derived waste (IDW) generated during the Big Wood River SI sampling event included disposable sampling supplies and disposable personal protection equipment. All IDW was double-bagged in opaque plastic bags and disposed at the local municipal landfill.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254000	BG01SW	MJ96Y5	SW	AM	6/16/08	1100	X	Big Wood River background sample. No odor.
08254001	BG02SW	MJ96Y6	SW	AM	6/16/08	1135	X	Big Wood River background wetland sample. Slightly turbid. No odor.
08254002	BG03SW	MJ96Y7	SW	AM	6/16/08	1040	X	Elkhorn Gulch sample. Salty odor.
08254003	BG04SW	MJ96Y8	SW	AM	6/16/08	940	X	Parker Gulch background wetland sample. No odor.
08254004	BR01SW	MJ96Y9	SW	BC	6/16/08	340	X	Big Wood River sample. No odor.
08254005	BR02SW	MJ96Z0	SW	BC	6/16/08	1240	X	Big Wood River sample. No odor.
08254006	BR03SW	MJ96Z1	SW	BC	6/17/08	0950	X	Big Wood River sample. No odor.
08254007	BR04SW	MJ96Z2	SW	BC	6/17/08	1023	X	Big Wood River sample. No odor.
08254008	BR05SW	MJ96Z3	SW	BC	6/17/08	1310	X	Big Wood River sample. No odor.
08254009	BR06SW	MJ96Z4	SW	BC	6/17/08	1350	X	Big Wood River sample. No odor.
08254010	BR07SW	MJ96Z5	SW	BC	6/17/08	1730	X	Big Wood River sample. No odor.
08254011	BR08SW	MJ96Z6	SW	BC	6/17/08	1800	X	Big Wood River sample.
08254023	BR20SW	MJ9708	SW	JH	6/18/08	1120	X	Big Wood River sample on Broadford Slough. No odor.
08254024	BR21SW	MJ9709	SW	JH	6/18/08	1105	X	Big Wood River sample on Broadford Slough. No odor.
08254025	BR22SW	MJ9710	SW	JH	6/18/08	0958	X	Big Wood River sample on Broadford Slough. No odor.
08254026	BR23SW	MJ9711	SW	JH	6/18/08	0900	X	Big Wood River sample on Broadford Slough. No odor.
08254027	BR24SW	MJ9712	SW	JH	6/18/08	0820	X	Big Wood River sample on Broadford Slough. No odor.
08254028	BR25SW	MJ9713	SW	AM	6/17/08	1630	X	Big Wood River sample from side channel. No odor.
08254029	BR26SW	MJ9714	SW	JH	6/17/08	1550	X	Big Wood River sample from side channel. No odor.
08254030	BR27SW	MJ9715	SW	JH	6/17/08	1100	X	Big Wood River sample. No odor.
08254031	BR28SW	MJ9716	SW	JH	6/17/08	1000	X	Big Wood River sample. No odor.
08254032	BR29SW	MJ9717	SW	JH	6/17/08	0858	X	Big Wood River sample. No odor.
08254033	BR30SW	MJ9718	SW	JH	6/17/08	0812	X	Big Wood River sample. No odor.
08254034	BR31SW	MJ9719	SW	JH	6/16/08	1740	X	Big Wood River sample. No odor.
08254035	BR32SW	MJ9720	SW	JH	6/16/08	1645	X	Big Wood River sample. Slight methane odor.
08254036	BR33SW	MJ9721	SW	JH	6/16/08	1550	X	Big Wood River sample. No odor.
08254037	BR34SW	MJ9722	SW	JH	6/16/08	1510	X	Big Wood River sample. No odor.
08254038	BR35SW	MJ9723	SW	JH	6/16/08	1425	X	Big Wood River sample. No odor.
08254042	CC01SW	MJ9727	SW	BC	6/17/08	1340	X	Croy Creek sample. No odor.
08254043	DC01SW	MJ9728	SW	BC	6/17/08	1744	X	Deer Creek sample.
08254044	EC01SW	MJ9729	SW	JH	6/16/08	1720	X	Elkhorn Gulch sample. No odor.
08254045	ER01SW	MJ9730	SW	JH	6/17/08	0840	X	East Fork Big Wood River sample. No odor.
08254046	GG01SW	MJ9731	SW	JH	6/17/08	1010	X	Greenhorn Gulch sample. No odor.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254047	EC02SW	MJ9732	SW	AM	6/18/08	1435	X	Elkhorn Gulch sample. Swampy odor.
08254048	IC01SW	MJ9733	SW	JH	6/18/08	1414	X	Independence Creek sample. No odor.
08254049	LG01SW	MJ9734	SW	JH	6/18/08	1045	X	Lee's Gulch sample. No odor.
08254052	RC01SW	MJ9737	SW	JH	6/18/08	1510	X	Clear Creek sample.
08254056	TC01SW	MJ9741	SW	JH	6/16/08	1525	X	Trail Creek sample. No odor.
08254057	TG01SW	MJ9742	SW	BC	6/16/08	1118	X	Townsend Gulch sample. No odor.
08254058	WC01SW	MJ9743	SW	JH	6/16/08	1355	X	Warm Springs Creek sample. No odor.
08254059	WD01SW	MJ9744	SW	BC	6/18/08	0934	X	Big Wood River wetland sample. No odor.
08254060	WD02SW	MJ9745	SW	BC	6/18/08	1027	X	Big Wood River wetland sample. No odor.
08254061	WD03SW	MJ9746	SW	BC	6/18/08	1152	X	Big Wood River wetland sample. No odor.
08254062	WD04SW	MJ9747	SW	BC	6/18/08	1420	X	Big Wood River wetland sample. No odor.
08254063	WD05SW	MJ9748	SW	BC	6/18/08	1520	X	Big Wood River wetland sample. No odor.
08254064	WD06SW	MJ9749	SW	BC	6/18/08	1542	X	Big Wood River wetland sample. No odor.
08254065	WD07SW	MJ9750	SW	BC	6/19/08	0857	X	Big Wood River wetland sample. No odor.
08254066	WD08SW	MJ9751	SW	BC	6/19/08	1006	X	Big Wood River wetland sample. No odor.
08254067	WD09SW	MJ9752	SW	BC	6/19/08	1116	X	Big Wood River wetland sample. No odor.
08254068	WD10SW	MJ9753	SW	BC	6/19/08	1332	X	Big Wood River wetland sample. No odor.
08254069	GG02SD	MJ9754	SD	BC	6/19/08	0816	X	
08254070	BG01SD	MJ9755	SD	AM	6/16/08	1102	X	Big Wood River background sample. Wet, medium brown, fine silty material with moderate organic content. No odor.
08254071	BG02SD	MJ9756	SD	AM	6/16/08	1137	X	Big Wood River background wetland sample. Wet, medium brown silt with some sand and moderate organic content. No odor.
08254072	BG03SD	MJ9757	SD	AM	6/16/08	1042	X	Elkhorn Gulch sample. Wet, light brown, coarse material with slight organic content. Salty odor.
08254073	BG04SD	MJ9758	SD	AM	6/16/08	0942	X	Parker Gulch background sample. Wet, medium brown, fine material with heavy organic content. No odor.
08254074	BR01SD	MJ9759	SD	BC	6/16/08	1542	X	Big Wood River sample. Wet, gray, medium to fine poorly graded sand. No organic material present. No odor.
08254075	BR02SD	MJ9760	SD	BC	6/16/08	1242	X	Big Wood River sample. Wet, gray, fine material. No organic material present. No odor.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254076	BR03SD	MJ9761	SD	BC	6/17/08	0955	X	Big Wood River sample. Wet, dark gray, poorly graded fine to medium sand. No organic material present. No odor.
08254077	BR04SD	MJ9762	SD	BC	6/17/08	1025	X	Big Wood River sample. Wet, dark brown/gray, fine sand to silt, poorly graded with moderate organic content. No odor.
08254078	BR05SD	MJ9763	SD	BC	6/17/08	1313	X	Big Wood River sample. Dry, gray, medium gravel and medium sand with slight organic content. No odor.
08254079	BR06SD	MJ9764	SD	BC	6/17/08	1530	X	Big Wood River sample. Wet, brown/grey, poorly graded with some gravel. Slight organic content. No odor.
08254080	BR07SD	MJ9765	SD	BC	6/17/08	1533	X	Big Wood River sample. Wet, gray, poorly graded fine to medium sand. No organic material present. No odor.
08254081	BR08SD	MJ9766	SD	BC	6/17/08	1802	X	Big Wood River sample.
08254093	BR20SD	MJ9778	SD	JH	6/18/08	1122	X	Big Wood River sample on Broadford Slough. Wet, brown coarse sand with silt and slight organic content. No odor.
08254094	BR21SD	MJ9779	SD	JH	6/18/08	1107	X	Big Wood River sample on Broadford Slough. Wet, dark brown/black silt with sand and small cobbles with moderate organic content. No odor.
08254095	BR22SD	MJ9780	SD	JH	6/18/08	1000	X	Big Wood River sample on Broadford Slough. Wet, brown silt with fine sand and slight organic content. No odor.
08254096	BR23SD	MJ9781	SD	JH	6/18/08	0902	X	Big Wood River sample on Broadford Slough. Wet, dark brown, silt with medium sand and heavy organic content. No odor.
08254097	BR24SD	MJ9782	SD	JH	6/18/08	0822	X	Big Wood River sample on Broadford Slough. Wet, dark brown silt with fine sand and heavy organic content. No odor.
08254098	BR25SD	MJ9783	SD	AM	6/17/08	1633	X	Big Wood River sample from side channel. Wet, dark brown silt with heavy organic content. No odor.
08254099	BR26SD	MJ9784	SD	JH	6/17/08	1555	X	Big Wood River sample from side channel. Wet, dark brown silt with coarse sand and small cobbles. Heavy organic content. No odor.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254100	BR27SD	MJ9785	SD	JH	6/17/08	1102	X	Big Wood River sample. Dry, dark brown, fine sand with some silt and cobbles. Heavy organic content. No odor.
08254101	BR28SD	MJ9786	SD	JH	6/17/08	1003	X	Big Wood River sample. Wet, dark brown, very fine sand with silt and heavy organic content. No odor.
08254102	BR29SD	MJ9787	SD	JH	6/17/08	0900	X	Big Wood River sample. Wet, brown, fine sand with some silt and moderate organic content. No odor.
08254103	BR30SD	MJ9788	SD	JH	6/17/08	0815	X	Big Wood River sample. Wet, medium-light brown sand with slight organic content. No odor.
08254104	BR31SD	MJ9789	SD	JH	6/16/08	1742	X	Big Wood River sample. Wet, dark brown to black silt and clay with heavy organic content. No odor.
08254105	BR32SD	MJ9790	SD	JH	6/16/08	1647	X	Big Wood River sample. Wet, light brown, medium-grained sand with some silt. Moderate organic content. Slight methane odor.
08254106	BR33SD	MJ9791	SD	JH	6/16/08	1552	X	Big Wood River sample. Wet, medium brown, fine sand with slight amount of silt. Slight organic content. No odor.
08254107	BR34SD	MJ9792	SD	JH	6/16/08	1312	X	Big Wood River sample. Wet, dark brown fine sand with silt and slight organic content. No odor.
08254108	BR35SD	MJ9793	SD	JH	6/16/08	1427	X	Big Wood River sample. Wet, light brown fine/medium sand with gravel and cobbles. No organic material present. No odor.
08254112	CC01SD	MJ9797	SD	BC	6/17/08	1342	X	Croy Creek sample. Wet, medium brown, medium grained sand to silt. Moderate organic content. No odor.
08254113	DC01SD	MJ9798	SD	BC	6/17/08	1746	X	Deer Creek sample.
08254114	EC01SD	MJ9799	SD	JH	6/16/08	1722	X	Elkhorn Gulch sample. Wet, light brown, coarse and with cobbles. Slight organic content. No odor.
08254115	ER01SD	MJ97A0	SD	JH	6/17/08	0842	X	East Fork Big Wood River sample. Wet, dark brown silt and some fine sand with heavy organic content. No odor.
08254116	GG01SD	MJ97A1	SD	JH	6/17/08	1012	X	Greenhorn Gulch sample. Wet, dark brown, silt with some coarse sand and cobbles. Heavy organic content. No odor.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254069	GG02SD	MJ9754	SD	BC	06/19/08	816	X	Greenhorn Gulch background sample. Wet, brown, medium sand to silt, moderately graded. No organic material present. No odor.
08254117	EC02SD	MJ97A2	SD	AM	6/18/08	1437	X	Elkhorn Gulch sample. Wet, gray to black silt with coarse sand and small cobbles with moderate organic content. Swampy odor.
08254118	IC01SD	MJ97A3	SD	JH	6/18/08	1416	X	Independence Creek sample. Wet, dark brown, coarse sand with small cobbles and silt with moderate organic content. No odor.
08254119	LG01SD	MJ97A4	SD	JH	6/18/08	1047	X	Lee's Gulch sample. Wet, brown silt with some clay and coarse sand with moderate organic content. No odor.
08254120	MG01SD	MJ97A5	SD	JH	6/17/08	1608	X	Mammoth Gulch sample. Wet, dark brown silt with medium to coarse sand and slight organic content.
08254121	NG01SD	MJ97A6	SD	JH	6/18/08	0843	X	Minni Moore Gulch sample. Dry, dark brown, clayey silt with slight organic content. No odor.
08254122	RC01SD	MJ97A7	SD	JH	6/18/08	1512	X	Clear Creek sample. Light brown, fine sand with coarse sand and some cobbles. Heavy organic content.
08254123	PG01SD	MJ97A8	SD	JH	6/18/08	1520	X	Parker Gulch sample. Dry, light brown, course sand with cobbles and some silt; and containing no organic material. No odor.
08254125	SG01SD	MJ97B0	SD	JH	6/18/08	0942	X	Star Gulch sample. Dry, dark brown silt with some medium sand and a little clay. Moderate organic content. No odor.
08254126	TC01SD	MJ97B1	SD	JH	6/16/08	1527	X	Trail Creek sample. Wet, dark brown/gray silt with some medium sand and heavy organic content. No odor.
08254127	TG01SD	MJ97B2	SD	BC	6/16/08	1120	X	Townsend Gulch sample. Wet, dark brown, well graded gravel to silt with slight organic content. No odor.
08254128	WC01SD	MJ97B3	SD	JH	6/16/08	1357	X	Warm Springs Creek sample. Wet, dark brown fine sand with silt and with slight organic content. No odor.
08254129	WD01SD	MJ97B4	SD	BC	6/18/08	0932	X	Big Wood River wetland sample. Wet, dark brown silt with moderate organic content. No odor.
08254130	WD02SD	MJ97B5	SD	BC	6/18/08	1025	X	Big Wood River wetland sample. Wet, dark brown fine sand to silt with some small gravel and heavy organic content. No odor.

Table 3-1 Sample Collection and Analytical Summary

EPA Sample ID	Station Location	CLP Sample ID	Matrix	Sampler	Date	Time	TAL Metals	Sample Description
08254131	WD03SD	MJ97B6	SD	BC	6/18/08	1150	X	Big Wood River wetland sample. Wet, dark brown silt with heavy organic content. No odor.
08254132	WD04SD	MJ97B7	SD	BC	6/18/08	1422	X	Big Wood River wetland sample. Wet, dark brown silt with moderate organic content. No odor.
08254133	WD05SD	MJ97B8	SD	BC	6/18/08	1522	X	Big Wood River wetland sample. Wet, dark brown silt with moderate organic content. No odor.
08254134	WD06SD	MJ97B9	SD	BC	6/18/08	1544	X	Big Wood River wetland sample. Wet, dark brown silt with heavy organic content. No odor.
08254135	WD07SD	MJ97C0	SD	BC	6/19/08	0859	X	Big Wood River wetland sample. Gray-brown fine sand to silt with heavy organic content. No odor.
08254136	WD08SD	MJ97C1	SD	BC	6/19/08	1008	X	Big Wood River wetland sample. Wet, dark brown silty material with heavy organic content. No odor.
08254137	WD09SD	MJ97C2	SD	BC	6/19/08	1118	X	Big Wood River wetland sample. Wet, brown medium sand to silt, moderately graded with heavy organic content. No odor.
08254138	WD10SD	MJ97C3	SD	BC	6/19/08	1334	X	Big Wood River wetland sample. Wet, brown/gray poorly graded, fine to medium grain sand with slight organic content. No odor.
08254139	GG02SW	MJ97C4	SW	BC	6/19/08	0816	X	Greenhorn Gulch background sample. No odor.
08254140	CG01SW	MJ97C5	SW	BC	6/17/08	0930	X	Colorado Gulch sample. No odor.
08254141	CG01SD	MJ97C6	SD	BC	6/17/08	0933	X	Colorado Gulch sample. Wet, dark brown silt with coarse gravel. Heavy organic content. No odor.

Key:

AM = Andy Maguire.
BC = Bryan Ciecko.
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identificaiton.
JH = Josh Hancock.
SD = Sediment.
SW = Surface Water.
TAL = Target Analyte List.
X = Sample was analyzed for.

Mile 99
Trail Creek
BG04
Warm Springs Creek
BG02
Mile 98
Parker Gulch
BG01
PG01
WC01
Mile 97
BG03
Ketchum
IC01
BR35
Mile 96
TC01
WD09
EC02
Independence Creek
BR34
BR33
Mile 95
BR31
BR32
Elkhorn Gulch
EC01
Mile 94
RC01
WD07
East Fork Big Wood River
Mile 93
WD08
Clear Creek
Mile 92
BR30
ER01
Mile 91
Greenhorn Gulch
BR29
GG02
BR28
Mile 90
BR27
GG01
WD06
Mile 89
Deer Creek
Mile 88
BR08
DC01
BR07
Mile 87
WD05
Mile 86
Mile 85
CC01
BR06
BR05
WD04
Mile 84
Croy Creek
BR03
BR04
CG01
Mile 83
WD03
BR22
Colorado Gulch
SG01
BR26
Mile 82
Star Gulch
MG01
WD02
Mile 81
Mammoth Gulch
BR24
BR23
BR25
NG01
Mile 80
WD01
Minnie Moore Gulch
BR21
BR02
LG01
BR20
TG01
Mile 79
BR01
Lees Gulch
Townsend Gulch
Mile 78
WD10
Mile 77

Legend

Sample Location

Wetlands

N
W E
S

0 0.5 1 2 Miles

ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

BIG WOOD RIVER

SITE INSPECTION

Blaine County, Idaho

FIGURE 3-1
SAMPLE LOCATION MAP

TDD Number:
07-05-0014

Map Reference:
USGS Topographical Maps 1:100,000

Date:
December 22, 2008

Drawn by:
amm

..\3START3\Big Wood River\GIS\Fig3-1SampleLocations.mxd

4 Quality Assurance/ Quality Control

QA/QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of sampling equipment, glassware and reagents. Specific QC requirements for laboratory analyses are incorporated in the *Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 2007). These QC requirements or equivalent requirements found in the analytical methods were followed for analytical work on the SI. Appendix E provides copies of Chain-of-Custody forms relating to SI data; while Appendix F provides Data Validation Memoranda and Laboratory Analytical Data Sheets. This section describes the QA/QC measures taken for the SI and provides an evaluation of the usability of data presented in this report.

Data from the CLP laboratory were reviewed and validated by EPA chemists. Data qualifiers were applied as necessary according to the following guidance:

- EPA (2004) *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*.

In the absence of other QC guidance, method- and/or SOP-specific QC limits were also utilized to apply qualifiers to the data.

4.1 Satisfaction of Data Quality Objectives

The following EPA (EPA 2000) guidance document was used to establish data quality objectives (DQOs) for this SI:

- *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), EPA/600/R-96/055.

The EPA TM determined that definitive data without error and bias determination would be used for the sampling and analyses conducted during the field activities. The data quality achieved during the field work produced sufficient data that met the DQOs stated in the SSSP (E & E 2008). A detailed discussion of accomplished SI objectives is presented in the following sections.

4.2 QA/QC Samples

QA samples (trip blanks and rinsate blanks) were not collected. Trip blanks are not required for TAL metals analyses. Rinsate blank samples are not required as all samples were collected with dedicated sampling equipment. QC samples included matrix spike (MS)/duplicate samples for inorganic analyses at a rate of one MS/duplicate per 20 samples per matrix.

4.3 Project-Specific Data Quality Objectives

The laboratory data were reviewed to ensure that DQOs for the project were met. The following describes the laboratories' abilities to meet project DQOs for precision, accuracy, and completeness and the field team's ability to meet project DQOs for representativeness and comparability. The laboratories and the field team were able to meet DQOs for the project.

4.3.1 Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples or MS/MSD samples measure the precision of the analytical method. The RPD values were reviewed for CLP laboratory samples. No sample results were qualified based on laboratory duplicate QC outliers therefore the project DQO for precision was met.

4.3.2 Accuracy

Accuracy indicates the conformity of the measurements to fact. Laboratory accuracy is defined as the percent recovery (%R) for MS analyses. The MS %R values were reviewed for all MS analyses. Forty one sample results (approximately 1.7% of the data) were qualified as estimated quantities (J or UJ) and 64 sample results (approximately 2.6% of the data) were rejected (R) based on spike QC outliers, therefore the project DQO for accuracy was met.

4.3.3 Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). All laboratory data were reviewed for data validation and usability. A total of 64 results were rejected (approximately 2.6% of the data); therefore, the project DQO for completeness was met.

4.3.4 Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental condition. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQO for representativeness was met.

4.3.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this site followed applicable field sampling techniques and specific analytical methodology. The DQO for comparability was met.

4.4 Laboratory QA/QC Parameters

The laboratory data also were reviewed for holding times/temperatures, laboratory blank samples; field/trip blank samples, rinsate blank samples, serial

dilution analyses, and interference check sample analyses. These QA/QC parameters are summarized below. In general, the laboratory and field QA/QC parameters were considered acceptable.

4.4.1 Holding Times/Temperatures

All holding times were met. All samples were maintained within QC temperature limits.

4.4.2 Laboratory Blanks

All laboratory blanks met the frequency criteria. The following potential contaminants of concern were detected in the laboratory blanks.

- TAL Metals: chromium, copper, iron, mercury, sodium, vanadium, and zinc.

See the data validation memoranda for qualifiers applied based on laboratory blank contamination.

4.4.3 Serial Dilution

Serial dilution analyses were performed at a frequency of one per 20 samples per matrix, meeting QC frequency criteria. A total of 107 results (approximately 4.3% of the data) were qualified as estimated quantities (J or UJ) based on serial dilution outliers.

4.4.4 Interference Check Samples

Interference check sample analyses were performed at a frequency of one per 20 samples per matrix meeting QC frequency criteria. All interference check sample results were within QC limits.

5 Analytical Results Reporting and Background Samples

This section describes the reporting and methods applied to analytical results presented in Section 6 (Surface Water Migration Pathway) of this report, and discuss background locations and their sample results. Table 3-1 lists all samples collected for laboratory analysis.

5.1 Analytical Results Evaluation Criteria

Analytical results presented in the summary tables of Section 6 shows all analytes detected above laboratory detection limits in bold type. Analytical results indicating elevated concentrations of contaminants in target samples (Section 6) with respect to background concentrations are shown underlined and in bold type. For the purposes of this investigation, elevated concentrations are those concentrations that are:

- Equal to or greater than the sample's Contract Required Quantitation Limit (CRQL) or the Sample Quantitation Limit (SQL) when a non-CLP laboratory was used; and
- Equal to or greater than the background sample's CRQL or SQL when the background concentration was below detection limits; or
- At least three times greater than the background concentration when the background concentration equals or exceeds the detection limits.

The analytical summary tables present all detected compounds, but only those detected analytes at potential targets meeting the elevated concentration criteria are discussed in the report text. All detected concentrations are also discussed for the background samples. When samples were diluted for re-analysis at a laboratory, the dilution results were considered for evaluation and are provided in the tables.

5.1.1 Sample Results Reporting

The analytes aluminum, calcium, iron, magnesium, potassium, and sodium are common earth crust elements. Based on EPA, Region 10 policy, these common earth crust elements will not be discussed in this report.

5.2 Background Samples

Background samples were collected for each of the naturally occurring media from which Big Wood River SI samples were collected. These media included surface water and sediment.

5.2.1 Background Sample Locations

A total of five co-located background surface water/sediment sample sets were collected for this SI. One background co-located surface water/sediment sample set was collected in the Big Wood River (BG01SW/SD) upgradient of the Warm Springs Creek. One co-located background surface water/sediment sample set (BG02SW/SD) was collected from a wetland located upgradient of the most upgradient wetland sample set. One background surface water/sediment sample set (BG03SW/SD) was collected from Parker Gulch, a tributary to Elkhorn Gulch. One background surface water/sediment sample set (BG04SW/SD) was collected from Elkhorn Gulch. Finally, one background surface water/sediment sample set (GG02SW/SD) was collected from Greenhorn Gulch.

5.2.2 Background Sample Results

Sample results for background samples are presented in the first column of each Section 6 tables. No metals were detected in any of the five background surface water samples (Tables 6-2, 6-6, 6-8, and 6-10). Ten metals were detected in sediment sample BG01SD (Table 6-1), nine metals were detected in sediment sample BG02SD (Table 6-9), ten metals were detected in sediment sample BG03SD (Table 6-5), eight metals were detected in sediment sample BG04SD (Table 6-5), and twelve metals were detected in sediment sample GG02SD (Table 6-7).

6 Surface Water Migration Pathway and Targets

This section discusses the surface water migration pathway; including targets in this pathway. This section also describes samples collected from this pathway and associated analytical results. The surface water migration pathway target distance limit (TDL) begins at the probable point of entry (PPE) of surface water runoff from the site to a surface water body and extends downstream for 15 miles. Figures 6-1 and 6-2 depict the surface water migration TDL.

6.1 Overland Pathway

Contamination may be migrating overland from various mining locations on tributaries to the Big Wood River. The surface water migration pathway TDL for this investigation begins at the confluence of Warm Springs Creek with the Big Wood River at the northern boundary; extends downstream to the confluence of Townsend Gulch and the Big Wood River; then continues 15 miles further downstream in the Big Wood River through the Magic Reservoir concluding approximately 1 mile downstream of the reservoir. The surface water migration pathway TDL is wholly contained within the Big Wood River.

The average annual flow rate of the Big Wood River is 741.5 as measured at Hailey, Idaho (located within the study area) (USGS 2009). The average annual net precipitation is 16.2 inches, also as measured at Hailey Idaho (usacitiesonline 2009).

6.2 Drinking Water Targets

There are no active municipal or domestic surface water intakes along the surface water migration pathway TDL. The segment of the Big Wood River within the TDL is used extensively for recreational fishing (Megargle 2009a).

6.3 Human Food Chain Targets

Commercial fishing does not occur on the Big Wood River between Bellevue and Ketchum, Idaho. Sport fishing does occur; however, most of this fishing is of the catch and release variety. There are not sport catch figures available for this area. Some harvest is for consumption, but this is a very small percentage of the overall fishing effort. Fishing guides and outfitters use this area of the river for their clientele, but again, primarily for catch and release fly fishing. Species sought include rainbow trout; and to a lesser extent brown trout and whitefish (Megargle

2009b). Despite relatively low harvest rates, the fishery is considered a high priority by the state for the region. The state reports that angler efforts and economics in this area are significant (Megargle 2009a).

6.3.1 Big Wood River and its Tributaries Sample Locations and Results

The Big Wood River was sampled from river mile 77 near Bellevue, Idaho to river mile 98 near Ketchum, Idaho. Additionally, tributaries to the Big Wood River were sampled to determine whether they may be contributing to metals contamination in the river. Appendix G provides tables summarizing surface water and sediment sample results for both the Big Wood River and its tributaries. Samples in these tables are organized from the most upstream to the most downstream. In total, 25 locations were sampled on the Big Wood River and 20 locations were sampled on its tributaries. Field sample collection data sheets are provided as Appendix B and provide sketches of the general location of each sample.

At each tributary, a minimum of three locations were sampled: one on the Big Wood River upstream of the tributary, one on the Big Wood River downstream of the tributary, and one on the tributary itself approximately 25 feet upstream of its confluence with the river.

The tributaries to the Big Wood River that were sampled include:

- Warm Springs Creek;
- Trail Creek;
- Elkhorn Gulch;
- Clear Creek;
- East Fork Big Wood River;
- Greenhorn Gulch;
- Deer Creek;
- Croy Creek;
- Colorado Gulch;
- Star Gulch;
- Mammoth Gulch;
- Minnie Moore Gulch;
- Lee's Gulch; and
- Townsend Gulch.

Some of the tributaries sampled differ from those proposed in the approved SSSP. Five streams proposed for sampling were not sampled since they could not be located. These include Indian Creek, Quigley Creek, Slaughterhouse Creek, Water Gulch, and Ohio Gulch; all located on the east side of the Big Wood River. One location was to be sampled on each of these streams. With EPA TM approval, these streams were replaced with four other streams in the study area. These streams were Parker Gulch, Independence Creek, Clear Creek, and Lee's Gulch. Both Parker Gulch and Independence Creek are tributaries to Elkhorn Gulch; while Clear Creek and Lee's Gulch are tributaries to the Big Wood River.

One location was sampled on each stream; with the exception of Parker Gulch where two locations were sampled. All surface water and sediment samples collected from the Big Wood River and its tributaries were analyzed for TAL metals including mercury.

Tables 6-1 and 6-2 provide sediment and surface water sample results for the Big Wood River; respectively. A total of seven (BR20SD, BR21SD, BR23SD through BR26SD, and BR31SD) out of 20 sediment sample locations contained elevated concentrations of metals. Metals present at elevated concentrations included arsenic, cadmium, cobalt, copper, lead, manganese, mercury, silver, and zinc.

Sample BR31SD collected downstream of Elkhorn Gulch contained arsenic, cobalt, lead, and zinc at elevated concentrations. As described below in Section 6.3.2, these contaminants were not likewise detected at elevated concentrations in Elkhorn Gulch sediment samples.

Sediment samples BR25SD and BR26SD, collected upstream and downstream of Mammoth Gulch both contained cadmium and zinc at elevated concentrations as did sediment sample BR24SD collected approximately 0.5 miles further downstream of this gulch. Sample BR24SD also contained lead at an elevated concentration.

Sediment samples BR21SD and BR23SD contained the greatest number of metals at elevated concentrations of all Big Wood River samples. Sediment sample BR23SD was collected approximately 25 feet downstream of Minnie Moore Gulch and contained arsenic, cadmium, lead, mercury, silver, and zinc at elevated concentrations. Sample BR21SD was the next downstream sample and contained these same metals at elevated concentrations in addition to copper and manganese. Sediment sample BR20SD, collected downstream of sample BR21SD just below Lee's Gulch, contained arsenic, lead, and zinc at elevated concentrations; however the concentrations observed in this sample were lower than those in sample BR21SD collected just upstream of Lee's Gulch indicating that Lee's Gulch itself was not likely to contain the source of this contamination.

In surface water samples, only manganese was detected at an elevated concentration. This analyte was detected at in elevated concentration in one sample, BR08SW. This sample was collected approximately 25 feet upstream of Deer Creek.

Water quality measurements collected at all surface water sample locations on the Big Wood River indicate a slightly alkaline environment with pH values ranging from 7.38 to 9.1. Conductivity values ranged from 0.104 to 0.317 milliSiemens per centimeter (mS/cm).

Table 6-3 and 6-4 provide sediment and surface water sample results, respectively, for tributaries to the Big Wood River. These tables provide results

for sample locations near their confluences with the Big Wood River. In all but two cases, background samples were not collected from these tributaries. The two exceptions are for Elkhorn Gulch and Greenhorn Gulch. Separate tables with all results for these two streams are provided below in Sections 6.3.2 and 6.3.3. Although sample results in Tables 6-3 and 6-4 are not compared to background concentrations, these results provide an indication of which tributaries are contributing the highest metals concentrations to the Big Wood River.

Both Star Gulch and Minnie Moore Gulch appear to have markedly higher metals concentrations in sediments relative to other tributary samples. In particular, arsenic, cadmium, copper, lead, manganese, mercury, and zinc appear to be high in these stream sediment samples. The sediment sample from Colorado Gulch also contained relatively high concentrations of arsenic, cadmium, copper, and zinc with the copper concentration being the highest of all the tributary sediment sample detections.

Neither Star Gulch nor Minnie Moore Gulch contained water that the time of sampling; hence surface water samples were not collected from these streams. Colorado Gulch contained markedly higher metals concentrations in surface water relative to other tributary samples. In particular, arsenic, manganese, and zinc appear to be high in this surface water sample.

Water quality measurements collected at all surface water sample locations on the tributaries indicate a slightly alkaline environment with pH values ranging from 7.57 to 8.73. Conductivity values ranged from 0.143 to 0.469 mS/cm.

6.3.2 Elkhorn Gulch and its Tributaries Sample Locations and Results

Three co-located surface water/sediment sample sets, including one background sample set, were collected from Elkhorn Gulch. Samples collected from Parker Gulch, a tributary to Elkhorn Gulch, include one sediment sample and one co-located surface water/sediment background sample set. Samples collected from Independence Creek, also a tributary to Elkhorn Gulch, consist of one co-located surface water/sediment sample set collected near the mouth of the creek. All surface water and sediment samples were analyzed for TAL metals including mercury. Additionally, water quality parameters were collected of surface water at each sample location. Field sample collection data sheets are provided as Appendix B and provide sketches of the general location of each sample.

Tables 6-5 and 6-6 provide sediment and surface water sample results, respectively, for Elkhorn Gulch and its tributaries. The background surface water/sediment sample set BG03SW/SD, collected from Elkhorn Gulch, was used for comparison to both Elkhorn Gulch and Independence Creek; while the background surface water/sediment sample set BG04SD, collected from Parker Gulch, was used for comparison to the downstream sample collected on Parker Gulch.

Sediment sample results for Elkhorn Gulch indicate the presence of copper at an elevated concentration. Sediment sample results for Independence Creek indicate the presence of arsenic, lead, and silver at elevated concentrations. Sediment sample results for Parker Gulch indicate the presence of arsenic and lead at elevated concentrations.

Surface water samples indicate the presence of manganese at elevated concentration in Independence Creek. No other metals were present at elevated concentrations in surface water samples from Elkhorn Gulch or Independence Creek. Parker Gulch was dry at the downstream sampling location. For this reason, a surface water sample was not collected; although an upstream, background, surface water sample was collected.

Water quality measurements for Elkhorn Gulch and its tributaries indicate a slightly alkaline environment with pH values ranging from 7.81 to 8.74. Conductivity values ranged from 0.385 to 0.82 mS/cm.

6.3.3 Greenhorn Gulch Sample Locations and Results

A total of two co-located surface water/sediment sample sets, including one background sample set, were collected from Greenhorn Gulch. The surface water and sediment samples were analyzed for TAL metals including mercury. Additionally, water quality parameters were collected of surface water at each sample location. Field sample collection data sheets are provided as Appendix B and provide sketches of the general location of each sample.

Tables 6-7 and 6-8 provide sediment and surface water results, respectively, for Greenhorn Gulch. No metals were detected at elevated concentrations in the sediment sample. The surface water sample contained manganese at an elevated concentration.

Water quality measurements for Greenhorn Gulch indicate a slightly alkaline environment with pH values of 8.41 and 9.08. Conductivity values were 0.139 and 0.299 mS/cm.

6.4 Environmental Targets

No fish species in the Big Wood River or its tributaries are classified as either threatened or endangered. The Wood River sculpin and the inland redband trout are classified by the Idaho Department of Fish and Game as ‘species of concern’. The Wood River sculpin is found most anywhere in the drainage; however, redband trout are largely found in the headwaters and would likely not be found in the study area, though they may occasionally be present (Megargle 2009a). A total of 9.7 miles of wetland frontage occur along the Big Wood River within the TDL (Hanson 2007). The locations of the wetlands in the area sampled for this SI are depicted on Figure 3-1.

6.4.1 Wetlands Sample Locations and Results

Eleven co-located surface water/sediment sample sets were collected from wetlands with frontage on the Big Wood River. All surface water and sediment samples collected from wetlands were analyzed for TAL metals including mercury. Additionally, water quality parameters were collected of surface water at each sample location. Field sample collection data sheets are provided as Appendix B and provide sketches of the general location of each sample.

Tables 6-9 and 6-10 provide sediment and surface water sample results, respectively, for wetlands adjacent to the Big Wood River. Sediment sample results indicate the presence of cadmium at elevated concentrations in five samples. Surface water sample results indicate the presence of manganese at elevated concentrations in three samples. Water quality measurements in Big Wood River wetlands indicate a slightly alkaline environment with pH values ranging from 7.79 to 9.2. Conductivity values ranged from 0.147 to 0.337 mS/cm.

Table 6-1 Big Wood River Sediment Samples Analytical Results Summary

EPA Sample ID	08254070	08254108	08254107	08254106	08254105	08254104	08254103	08254102	08254101	08254100	08254081
CLP Sample ID	MJ9755	MJ9793	MJ9792	MJ9791	MJ9790	MJ9789	MJ9788	MJ9787	MJ9786	MJ9785	MJ9766
Station Location	BG01SD	BR35SD	BR34SD	BR33SD	BR32SD	BR31SD	BR30SD	BR29SD	BR28SD	BR27SD	BR08SD
Description	Background										
Target Analyte List Metals (mg/kg)											
Aluminum	**10400**	**5010**	**5730**	**7060**	**6990**	**14300**	**5480**	**5340**	**6370**	**6660**	**6360**
Antimony	R	R	R	R	R	1.8 JQ	R	R	R	R	R
Arsenic	**9.6**	**4**	**3.9**	**6.2**	**5**	**7.3**	**5.5 JL**	**5.8 JL**	**4.9 JL**	**6.5 JL**	**5.6**
Barium	**110**	**53.6**	**90.6**	**140**	**124**	**241**	**119**	**108**	**144**	**127**	**118**
Beryllium	**0.82**	0.38 JQ	0.4 JQ	0.48 JQ	0.49 JQ	**1**	0.46 JQ	0.46 JQ	0.51 JQ	0.5 JQ	0.46 JQ
Cadmium	0.37 JQ (SQL = 0.72	0.16 JQ	0.2 JQ	0.64 JQ	0.39 JQ	**2.9**	0.19 JQ	0.34 JQ	0.40 JQ	0.39 JQ	0.49 JQ
Calcium	**4510**	**2020**	**2680**	**4920**	**3710**	**17500**	**5280**	**4070**	**6330**	**6840**	**7960**
Chromium	**31.9**	**19.6**	**19.7**	**22.9**	**21.3**	**34.7**	**18.6**	**18.1**	**20.6**	**20**	**19.7**
Cobalt	7 JQ (SQL = 7.2 U)	4.4 JQ	4.3 JQ	5.1 JQ	5.1 JQ	**9.7**	4.6 JQ	4.2 JQ	4.7 JQ	4.7 JQ	4.6 JQ
Copper	**11.3**	**4.9**	**5.4**	**10.9**	**8**	**23.9**	**8.4**	**9.5**	**11.2**	**9.1**	**9.9**
Iron	**14600**	**9500**	**9710**	**12100**	**11700**	**16600**	**11100**	**10500**	**10400**	**11200**	**10800**
Lead	**23.6**	**12.4**	**22.3**	**30.6**	**29.1**	**112**	**23.9**	**22.4**	**27.6**	**28.5**	**21.6**
Magnesium	**5670**	**4090**	**3970**	**5310**	**4980**	**6850**	**4930**	**4130**	**5610**	**5240**	**5140**
Manganese	**304**	**167**	**143**	**203**	**148**	**543**	**142**	**164**	**112**	**190**	**152**
Mercury	0.14 U	0.048 U	0.055 U	0.14 U	0.075 U	0.12 U	0.16 U	0.14 U	0.15 U	0.16 U	0.081 U
Nickel	**20**	**13.4**	**12**	**18**	**14.9**	**29**	**16.2**	**16.8**	**18.4**	**16.6**	**18.2**
Potassium	**1200**	532 JQ	**852**	**1110**	**1120**	**2670**	696 JQ	**830**	**965**	**1070**	**1020**
Selenium	5 UJL	4.2 UJL`	4.7 UJL	4.8 UJL	4.8 UJL	6.4 UJL	5.7 UJL	4.9 UJL	5.2 UJL	5.5 UJL	5 UJL
Silver	1.4 U	1.2 U	1.3 U	1.4 U	1.4 U	0.65 JQ	1.6 U	1.4 U	1.5 U	1.6 U	1.4 U
Thallium	3.6 U	3 U	3.3 U	3.4 U	3.4 U	4.6 U	4.1 U	3.5 U	3.7 U	3.9 U	3.6 U
Vanadium	**24.3**	**15**	**15.1**	**22.2**	**21.1**	**34.2**	**20.4**	**20.9**	**23**	**21.2**	**25.4**
Zinc	**56.7 JL**	**35.6 JL**	**68.7 JL**	**125 JL**	**113 JL**	**207 JL**	**81**	**81.3**	**93.6**	**112**	**94.6 JL**

Table 6-1 Big Wood River Sediment Samples Analytical Results Summary

EPA Sample ID	08254070	08254080	08254079	08254078	08254077	08254076	08254095	08254099	08254098	08254097	08254096
CLP Sample ID	MJ9755	MJ9765	MJ9764	MJ9763	MJ9762	MJ9761	MJ9780	MJ9784	MJ9783	MJ9782	MJ9781
Station Location	BG01SD Background	BR07SD	BR06SD	BR05SD	BR04SD	BR03SD	BR22SD	BR26SD	BR25SD	BR24SD	BR23SD
Target Analyte List Metals (mg/kg)											
Aluminum	**10400**	**5110**	**4610**	**4540**	**5210**	**4960**	**4960**	**3490**	**7980**	**7000**	**9110**
Antimony	R	R	R	R	R	R	R	R	R	R	**12.5 JL**
Arsenic	**9.6**	**4.7**	**5.7**	**5.4**	**4.1**	**4.7**	**3.9 JL**	**5.2 JL**	**7.4 JL**	**7.6 JL**	**58.7 JL**
Barium	**110**	**93.6**	**93.6**	**74.3**	**163**	**91.9**	**106**	**53.1**	**133**	**118**	**128**
Beryllium	**0.82**	0.37 JQ	0.34 JQ	0.33 JQ	0.4 JQ	0.35 JQ	0.39 JQ	0.24 JQ	0.63 JQ	0.57 JQ	0.62 JQ
Cadmium	0.37 JQ (SQL = 0.72	0.32 JQ	0.25 JQ	0.35 JQ	0.41 JQ	0.33 JQ	0.61 JQ	**1.8 JL**	**4.7 JL**	**2.8 JL**	**4.5 JL**
Calcium	**4510**	**5100**	**3950**	**3250**	**5720**	**5560**	**8400**	**3370**	**6770**	**6560**	**7330**
Chromium	**31.9**	**16.4**	**15.2**	**15.1**	**17.1**	**16.2**	**14.6**	**11.4**	**25.5**	**21.4**	**30**
Cobalt	7 JQ (SQL = 7.2 U)	3.9 JQ	3.9 JQ	3.9 JQ	4.1 JQ	3.9 JQ	3.7 JQ	2.4 JQ	5.1 JQ	4.8 JQ	6.8 JQ
Copper	**11.3**	**8.4**	**8.4**	**8.9**	**8.7**	**8.1**	**7.2**	**10.8**	**18.7**	**13.9**	**33.7**
Iron	**14600**	**9550**	**8880**	**9040**	**9240**	**9220**	**7330**	**5570**	**11000**	**9690**	**18800**
Lead	**23.6**	**16.1**	**16.8**	**15.2**	**20**	**17.6**	**39.4**	**26.4**	**70.3**	**75.7**	**735**
Magnesium	**5670**	**4110**	**3850**	**3610**	**4220**	**4000**	**3990**	**2410**	**5020**	**5000**	**7440**
Manganese	**304**	**128**	**113**	**156**	**95.1**	**112**	**108**	**49**	**124**	**115**	**517**
Mercury	0.14 U	0.075 U	0.06 U	0.055 U	0.15 U	0.14 U	0.14 U	0.074 U	0.16 U	0.11 U	**0.22**
Nickel	**20**	**15.1**	**14.8**	**14.9**	**16.5**	**15.5**	**13.1**	**11.3**	**21**	**18.9**	**18**
Potassium	**1200**	**769**	658 JQ	**777**	**848**	**712**	**767**	557 JQ	1120 JQ	1080 JQ	**3990**
Selenium	5 UJL	4.7 UJL	4.7 UJL	3.5 UJL	5.4 UJL	4.9 UJL	4.8 UJL	6.1 UJL	10.6 UJL	7.8 UJL	6.1 UJL
Silver	1.4 U	1.3 U	1.4 U	1 U	1.5 U	1.4 U	1.4 U	1.7 U	0.29 JQ	0.25 JQ	**9.4**
Thallium	3.6 U	3.4 U	3.4 U	2.5 U	3.8 U	3.5 U	3.4 U	4.4 U	7.6 U	5.6 U	1.8 JQ
Vanadium	**24.3**	**20.6**	**18.8**	**18.6**	**20**	**18.9**	**15.8**	**13.8**	**25.3**	**25.2**	**47.4**
Zinc	**56.7 JL**	**76.2 JL**	**62.7 JL**	**63.6 JL**	**87.2 JL**	**71.8 JL**	**114**	**205**	**483**	**291**	**866**

Table 6-1 Big Wood River Sediment Samples Analytical Results Summary

EPA Sample ID	08254070	08254094	08254093	08254075	08254074
CLP Sample ID	MJ9755	MJ9779	MJ9778	MJ9760	MJ9759
Station Location	BG01SD Background	BR21SD	BR20SD	BR02SD	BR01SD
Target Analyte List Metals (mg/kg)					
Aluminum	**10400**	**4900**	**8150**	**4410**	**4140**
Antimony	R	**11.7 JL**	R	R	R
Arsenic	**9.6**	**84.4 JL**	**40 JL**	**4.3**	**4.6**
Barium	**110**	**85.4**	**90.6**	**90.1**	**69.3**
Beryllium	**0.82**	0.4 JQ	0.47 JQ	0.33 JQ	0.27 JQ
Cadmium	0.37 JQ (SQL = 0.72	**3.4 JL**	0.38 JQ	0.3 JQ	0.26 JQ
Calcium	**4510**	**5890**	**6870**	**4450**	**4520**
Chromium	**31.9**	**15.9**	**39**	**14.6**	**14**
Cobalt	7 JQ (SQL = 7.2 U)	3.2 JQ	6.7 JQ	3.6 JQ	3.3 JQ
Copper	**11.3**	**38.3**	**12.1**	**7.9**	**7.5**
Iron	**14600**	**19900**	**16600**	**8610**	**8100**
Lead	**23.6**	**1440**	**438**	**14.7**	**16**
Magnesium	**5670**	**5010**	**7300**	**3710**	**3480**
Manganese	**304**	**1930**	**282**	**118**	**106**
Mercury	0.14 U	**0.35**	0.14 JQ	0.068 U	0.08 U
Nickel	**20**	**13.3**	**16.9**	**13.9**	**13.1**
Potassium	**1200**	**980**	**2800**	626 JQ	619 JQ
Selenium	5 UJL	5.2 UJL	5.7 UJL	4.8 UJL	4.8 UJL
Silver	1.4 U	**16.9**	1.4 JQ	1.4 U	1.4 U
Thallium	3.6 U	3.7 U	1.8 JQ	3.4 U	3.4 U
Vanadium	**24.3**	**25.1**	**38.7**	**18.8**	**15.5**
Zinc	**56.7 JL**	**1130**	**333**	**63.2 JL**	**68.9 JL**

Note: Bold type indicates the sample result is above the instrument detection limit.
Underline type indicates the sample result is elevated as defined in Section 5.

Key:

CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The associated value is an estimated quantity.
L = Low bias.
mg/kg = milligrams per kilogram.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
R = The data are unusable. Tha analyte may or may not be present in the sample.
SQL = Sample quantitation limit.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-2 Big Wood River Surface Water Samples Analytical Results Summary

EPA Sample ID	08254000	08254038	08254037	08254036	08254035	08254034	08254033	08254032	08254031	08254030
CLP Sample ID	MJ96Y5	MJ9723	MJ9722	MJ9721	MJ9720	MJ9719	MJ9718	MJ9717	MJ9716	MJ9715
Station Location	BG01SW	BR35SW	BR34SW	BR33SW	BR32SW	BR31SW	BR30SW	BR29SW	BR28SW	BR27SW
Description	Background									
Target Analyte List Metals (mg/L)										
Aluminum	**256**	156 JQ	176 JQ	**201**	**222**	**250**	**361**	**344**	**338**	**349**
Calcium	**24600**	**25100**	**23700**	**25500**	**26300**	**27200**	**26500**	**26700**	**26700**	**25200**
Iron	**227**	**140**	**180**	**206**	**200**	**223**	**345**	**330**	**330**	**337**
Magnesium	3360 JQ	3320 JQ	3280 JQ	**5040**	**5010**	**5250**	**5140**	**5280**	**5240**	**5070**
Manganese	6.8 JQ (SQL = 15 U)	5 JQ	6.6 JQ	6.1 JQ	6.9 JQ	7.2 JQ	12 JQ	12.1 JQ	11.4 JQ	11.2 JQ
Water Quality Parameters										
Temperature (^{o}C)	7.3	10.6	11.7	11.8	11.9	12.2	7.7	7.3	7.5	8.1
pH	7.89	8.09	8.02	8.2	8.23	8.1	7.38	7.65	8.03	8.36
Conductivity (mS/cm)	0.141	0.104	0.152	0.165	0.178	0.173	0.181	0.182	0.183	0.177
Dissolved Oxygen (mg/L)	8.74	8.25	8.08	8.2	7.89	8.19	7.5	7.43	7.38	8.6
Turbidity (NTU)	10	10	10	10	10	10	79	NR	NR	NR
Salinity (%)	0	0	0	0	0	0	0	0	0	0

Table 6-2 Big Wood River Surface Water Samples Analytical Results Summary

EPA Sample ID	08254000	08254011	08254010	08254009	08254008	08254007	08254006	08254025	08254029	08254028	08254027
CLP Sample ID	MJ96Y5	MJ96Z6	MJ96Z5	MJ96Z4	MJ96Z3	MJ96Z2	MJ96Z1	MJ9710	MJ9714	MJ9713	MJ9712
Station Location	BG01SW Background	BR08SW	BR07SW	BR06SW	BR05SW	BR04SW	BR03SW	BR22SW	BR26SW	BR25SW	BR24SW
Target Analyte List Metals (mg/L)											
Aluminum	**256**	117 JQ	**280**	**314**	**316**	**322**	**393**	**460**	200 U	101 JQ	119 JQ
Calcium	**24600**	**28800**	**27600**	**28800**	**28600**	**26600**	**28300**	**26600**	**44100**	**40200**	**28700**
Iron	**227**	160.0 U	**260**	**299**	**303**	**306**	**383**	**454**	58.3 U	147 U	**133**
Magnesium	3360 JQ	**5300**	**5440**	**5620**	**5520**	**5330**	**5530**	**5230**	**9070**	**8200**	**5620**
Manganese	6.8 JQ (SQL = 15 U)	**27.0**	9.3 JQ	12.4 JQ	11.7 JQ	11.2 JQ	13.2 JQ	14 JQ	4.6 JQ	6.9 JQ	5.3 JQ
Water Quality Parameters											
Temperature (^{o}C)	7.3	12.3	13.1	11.2	10.9	8.9	8.9	8.7	12.9	12.9	9.3
pH	7.89	8.96	9.1	8.95	8.95	8.78	8.72	7.82	7.72	7.82	7.44
Conductivity (mS/cm)	0.141	0.158	0.171	0.187	0.179	0.172	0.176	0.191	0.317	0.288	0.221
Dissolved Oxygen (mg/L)	8.74	11.92	12.26	11.67	12.31	12.32	11.81	7.1	3.3	3.85	5.65
Turbidity (NTU)	10	117	162	12	81	19	11	NR	61	NR	NR
Salinity (%)	0	0	0	0	0	0	0	0	0.01	0.01	0

Table 6-2 Big Wood River Surface Water Samples Analytical Results Summary

EPA Sample ID	08254000	08254026	08254024	08254023	08254005	08254004
CLP Sample ID	MJ96Y5	MJ9711	MJ9709	MJ9708	MJ96Z0	MJ96Y9
Station Location	BG01SW Background	BR23SW	BR21SW	BR20SW	BR02SW	BR01SW
Target Analyte List Metals (mg/L)						
Aluminum	**256**	37.4 JQ	200 U	200 U	**312**	**230**
Calcium	**24600**	**34800**	**43600**	**43200**	**29300**	**32200**
Iron	**227**	66.5 JQ	12.4 JQ	12.2 JQ	**307**	**214**
Magnesium	3360 JQ	**6710**	**8170**	**8020**	**5800**	**6280**
Manganese	6.8 JQ (SQL = 15 U)	15.0 U	15.0 U	15.0 U	11.0 JQ	8.2 JQ
Water Quality Parameters						
Temperature (^{o}C)	7.3	9.2	10.1	10.9	11.4	13.2
pH	7.89	7.54	7.74	7.84	8.33	8.53
Conductivity (mS/cm)	0.141	0.258	0.318	0.316	0.191	0.204
Dissolved Oxygen (mg/L)	8.74	4.75	6.42	8.36	8.25	7.51
Turbidity (NTU)	10	NR	NR	NR	291	451
Salinity (%)	0	0	NR	0.01	0	0

Note: Bold type indicates the sample result is above the instrument detection limit.
Underline type indicates the sample result is elevated as defined in Section 5.

Key:

% = Percent.
^{o}C = Degrees celsius.
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The associated value is an estimated quantity.
mg/L = milligrams per liter.
mS/cm = milliSiemens per centimeter.
NR = Not recorded.
NTU = Nephelometric Turbidity Units.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
SQL = Sample quantitation limit.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-3 Big Wood River Tributary Sediment Samples Analytical Results Summary

EPA Sample	08254128	08254126	08254114	08254122	08254115	08254116	08254113	08254112	08254141	08254125	08254120	08254121	08254119	08254127
CLP Sample	MJ97B3	MJ97B1	MJ9799	MJ97A7	MJ97A0	MJ97A1	MJ9798	MJ9797	MJ97C6	MJ97B0	MJ97A5	MJ97A6	MJ97A4	MJ97B2
Station Loca	WC01SD	TC01SD	EC01SD	RC01SD	ER01SD	GG01SD	DC01SD	CC01SD	CG01SD	SG01SD	MG01SD	NG01SD	LG01SD	TG01SD
Description	Warm Springs Creek	Trail Creek	Elkhorn Gulch	Clear Creek	East Fork Big Wood River	Greenhorn Gulch	Deer Creek	Croy Creek	Colorado Gulch	Star Gulch	Mammoth Gulch	Minnie Moore Gulch	Lees Gulch	Townsend Gulch
Target Analyte List Metals (mg/kg)														
Aluminum	**7040**	**5060**	**5290**	**2160**	**6430**	**11300**	**4600**	**8590**	**20400**	**13800**	**15600**	**16800**	**13800**	**10900**
Antimony	7.8 UJL	R	R	R	R	R	R	R	R	R	R	**10.7 JL**	R	R
Arsenic	**7.0 JH**	**7.8**	**2.9**	1.7 U	**7.3 JL**	**5.5 JL**	**5.2 JL**	**5.6 JL**	**61.7**	**48.5**	**25.9 JL**	**330**	**2.2 JL**	**3.8**
Barium	**168**	**169**	**122**	15.1 JQ	**111**	**220**	**84.1**	**134**	**233**	**199**	**190**	**276**	**206**	**129**
Beryllium	0.47 JQ	0.44 JQ	0.36 JQ	0.12 JQ	0.44 JQ	0.88 JQ	0.38 JQ	0.58 JQ	0.96 JQ	**0.78**	**1.0**	**0.93**	**0.71**	0.53 JQ
Cadmium	**0.75**	**1.3**	0.37 JQ	**0.08 JH**	0.7 JQ	0.24 JQ	**0.2 JL**	0.3 JQ	**8.2 JH**	**87.9 JH**	**3.1 JL**	**22.9 JH**	0.46 JQ	0.27 JQ
Calcium	**3770**	**17900**	**12300**	**8210**	**23800**	**7810**	**5170**	**5350**	**17400**	**12100**	**7690**	**21400**	**5700**	**5390**
Chromium	**16.9**	**15.7**	**19.4**	**4.4**	**16.4**	**31.6**	**14.9**	**24.7**	**49.4**	**28**	**36.2**	**39.7**	**42.5**	**53.5**
Cobalt	**16.9**	4.0 JQ	5.9 JQ	0.37 JQ	4.4 JQ	8.4 JQ	3.5 JQ	6.3 JQ	14.5 JQ	**10.4 JL**	**10.2**	**13.2 JL**	**9.9**	**10.4**
Copper	7.7	**27.9**	**7.0**	2.1 JQ	**8.9**	**19.2**	**8.0**	**9.8**	**239**	**89.7**	**27.2**	**93.9**	**12**	**9**
Iron	**11800**	**11400**	**9540**	**2300**	**11400**	**11600**	**8710**	**12900**	**25200**	**20200**	**22300**	**32600**	**22200**	**19100**
Lead	**59.5**	**15.2**	**42.8**	**3.4**	**24.7**	**23.0**	**16.7**	**72**	**14.4**	**1530**	**50.1**	**2070**	**16.2**	**2.9**
Magnesium	**3870**	**9850**	**3700**	767 JQ	**5590**	**4570**	**3880**	**5310**	**12400**	**9440**	**8920**	**11100**	**9290**	**9440**
Manganese	**224**	**230**	**176**	**17.6**	**225**	**538**	**124**	**111**	**308**	**1460**	**478**	**1610**	**511**	**673**
Mercury	0.13 U	0.072 U	0.057 U	0.17 U	0.16 U	0.20 U	0.15 U	0.13 U	0.17 JQ	**0.61**	0.11 U	**0.95**	0.14 U	0.052 U
Nickel	**10.5**	**34.9**	**14.8**	3.9 JQ	**17.6**	**16.5**	**13.9**	**13.8**	**51.5**	**59.9**	**36.5**	**56.4**	**14.2**	**18.8**
Potassium	**1340**	**1390**	**1050**	396 JQ	**1400**	**2040**	693 JQ	**1480**	**4360**	**3460**	**5910**	**4650**	**7470**	**3910**
Selenium	4.5 U	5 UJL	4.4 UJL	6.1 U	5.7 UJL	7.0 UJL	5.2 UJL	4.5 UJL	10.3 JQ	**12.5**	5.4 UJL	2.3 JQ	4.7 UJL	4.5 UJL
Silver	1.3 U	0.19 JQ	1.3 U	1.7 U	1.6 U	2.0 U	1.5 U	1.3 U	3.2 U	**26.2**	1.6 U	**13.4**	1.3 U	1.3 U
Thallium	3.2 U	3.5 U	3.1 U	4.4 U	4.1 U	5.0 U	3.7 U	3.2 U	5.4 JQ	**4.2**	3.9 U	**4.9**	3.4 U	3.2 U
Vanadium	**19.5**	**60.2**	**20.4**	2.1 JQ	**18.3**	**28.2**	**17.6**	**31**	**80.3**	**91.1**	**74.3**	**79.7**	**58.9**	**50**
Zinc	**177**	**137 JL**	**54.5 JL**	**19.1**	**133**	**105**	**64.6**	**106**	**593**	**6430**	**243**	**3340**	**98.8**	**46.9 JL**

Note: Bold type indicates the sample result is above the instrument detection limit.

Key:

CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The associated value is an estimated quantity.
L = Low bias.
mg/kg = milligrams per kilogram.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
R = The data are unusable. Tha analyte may or may not be present in the sample.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-4 Big Wood River Tributary Surface Water Samples Analytical Results Summary

EPA Sample ID	08254058	08254056	08254044	08254052	08254045	08254046	08254043	08254042	08254140	08254049	08254057
CLP Sample ID	MJ9743	MJ9741	MJ9729	MJ9737	MJ9730	MJ9731	MJ9728	MJ9727	MJ97C5	MJ9734	MJ9742
Station Location	WC01SW	TC01SW	EC01SW	RC01SW	ER01SW	GG01SW	DC01SW	CC01SW	CG01SW	LG01SW	TG01SW
Description	Warm Springs Creek	Trail Creek	Elkhorn Gulch	Clear Creek	East Fork Big Wood River	Greenhorn Gulch	Deer Creek	Croy Creek	Colorado Gulch	Lees Gulch	Townsend Gulch
Target Analyte List Metals (mg/L)											
Aluminum	**533**	**273**	8.3 JQ	200 U	**422**	38.1 JQ	200 U	116 JQ	**728**	49 JQ	200 U
Arsenic	10.0 U	10.0 U	10 U	10.0 U	10.0 U	10 U	10.0 U	10.0 U	**19.1 JL**	10.0 U	10.0 U
Calcium	**19100**	**32900**	**48700**	**34500**	**19500**	**25800**	**43200**	**53200**	**78700**	**39000**	**45100**
Iron	**406**	**374**	88.1 JQ	100 U	**1040**	69.1 JQ	100 U	**321**	**848**	**138**	56.5 JQ
Magnesium	3280 JQ	**11900**	**16400**	**19000**	**5260**	**10800**	4640 JQ	**8630**	**18000**	**13800**	**16300**
Manganese	7.6 JQ	8.5 JQ	5.7 JQ	15 U	**17.9**	**38.5**	6.9 JQ	**64.3**	**123**	**28.2**	7.6 JQ
Sodium	4080 JQ	828 JQ	63700	2360 JQ	853 JQ	**5180**	4140 JQ	**8410**	**6610**	**5470**	**6030**
Zinc	18.1 JQ	8.0 JQ	0.95 JQ	60 U	12.8 JQ	0.89 JQ	60 U	15.2 JQ	**105**	0.73 JQ	60 U
Water Quality Parameters											
Temperature (^{o}C)	14.3	9.2	17.1	19.3	5.9	17.5	14.6	15	9.2	10.2	10.2
pH	7.83	8.08	8.73	8.46	8.03	8.41	8.2	7.91	8.07	7.71	7.57
Conductivity (mS/cm)	0.169	0.243	0.385	0.339	0.143	0.299	0.263	0.341	0.469	0.354	0.392
Dissolved Oxygen (mg/L	7.13	8.54	8.6	8.5	7.46	6	11.75	11	4.04	3.45	5.03
Turbidity (NTU)	10	10	10	NR	NR	NR	40	5	4	NR	9
Salinity (%)	0	0	0.01	0.01	0	0.01	0	0.01	0.01	0.01	0.01

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ID = Identification.
J = The associated value is an estimated quantity.
L = Low bias.
mg/L = milligrams per liter.
mS/cm = milliSiemens per centimeter.
NR = Not recorded.
NTU = Nephelometric Turbidity Units.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-5 Elkhorn Gulch Sediment Samples Analytical Results Summary

EPA Sample ID	08254073	08254123	08254072	08254118	08254117	08254114
CLP Sample ID	MJ9758	MJ97A8	MJ9757	MJ97A3	MJ97A2	MJ9799
Station Location	BG04SD	PG01SD	BG03SD	IC01SD	ECO2SD	EC01SD
Description	Parker Gulch Background	Parker Gulch	Elkhorn Creek Background	Independence Creek	Elkhorn Gulch	
Target Analyte List Metals (mg/kg)						
Aluminum	**6020**	**1330**	**3870**	**8310**	**7570**	**5290**
Antimony	R	R	R	R	R	R
Arsenic	1.5 JQ (SQL = 5.32 U)	**5.6**	**5.3**	**33.6 JL**	**5.4 JL**	**2.9**
Barium	**254**	**133**	**147**	**208**	**177**	**122**
Cadmium	**9.9**	**2.2 JH**	**0.93**	**2.0 JL**	1.1 JQ	0.37 JQ
Calcium	**77400**	**334000**	**105000**	**8330**	**86200**	**12300**
Chromium	**6.0**	2.5 JQ	**13.6**	**33.4**	**22.3**	**19.4**
Copper	**23.8**	**10.2**	**9.1**	**20.1**	**51.8**	**7.0**
Iron	**13300**	**1640**	**7230**	**14300**	**9580**	**9540**
Lead	**15.4**	**61.5**	**43.5**	**893**	**27.6**	**42.8**
Magnesium	**5300**	**5630**	**5510**	**6460**	**5050**	**3700**
Manganese	**347**	**56.7**	**117**	**304**	**282**	**176**
Nickel	**96.1**	**20.8**	**11.7**	**32**	**17.8**	**14.8**
Potassium	1260 JQ	320 JQ	**925**	**1810**	**1620**	**1050**
Silver	5.3 U	1.2 U	1.6 U	**8.0**	2.5 U	1.3 U
Vanadium	11.1 JQ (SQL = 26.6 U)	**8.1**	**28.9**	**43.3**	**22.4**	**20.4**
Zinc	**876 JL**	**194**	**71.5 JL**	**181**	**167**	**54.5 JL**

Note: Bold type indicates the sample result is above the instrument detection limit.
Underline type indicates the sample result is elevated as defined in Section 5.

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SQL = Sample quantitation limit.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-6 Elkhorn Gulch Surface Water Samples Analytical Results Summary

EPA Sample ID	08254003	08254002	08254048	08254047	08254044
CLP Sample ID	MJ96Y8	MJ96Y7	MJ9733	MJ9732	MJ9729
Station Location	BG04SW	BG03SW	IC01SW	EC02SW	EC01SW
Description	Background Parker Gulch	Background Elkhorn Gulch	Independence Creek	Elkhorn Gulch	
Target Analyte List Metals (mg/L)					
Aluminum	200 U	200 U	**934**	20.6 JQ	87.3 JQ
Calcium	**91500**	**97100**	**96800**	**74000**	**48700**
Iron	62.6 U	27.5 U	**944**	46.2 JQ	88.1 JQ
Lead	10.0 U	10.0 U	**30.2**	10 U	10 U
Magnesium	**50800**	**53100**	**17600**	**29800**	**16400**
Manganese	4.1 JQ (SQL = 15 U)	2.5 JQ (SQL = 15 U)	**31.6**	6.8 JQ	5.7 JQ
Sodium	3460 JQ	**6030**	**6220**	**9570**	**6370**
Water Quality Parameters					
Temperature (^{o}C)	7.2	9.8	13	16.4	17.1
pH	7.81	7.9	8.35	8.74	8.73
Conductivity (mS/cm)	0.78	0.82	0.684	0.657	0.385
Dissolved Oxygen (mg/L)	7.14	7.5	6.91	10.87	8.6
Turbidity (NTU)	10	10	NR	NR	10
Salinity (%)	0.03	0.03	0.02	0.01	0.01

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EPA = United States Environmental Protection Agency.
ID = Identification.
J = The associated value is an estimated quantity.
mg/L = milligrams per liter.
mS/cm = milliSiemens per centimeter.
NR = Not recorded.
NTU = Nephelometric Turbidity Units.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
SQL = Sample quantitation limit.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-7 Greenhorn Gulch Sediment Samples Analytical Results Summary

EPA Sample ID	08254069	08254116
CLP Sample ID	MJ9754	MJ97A1
Station Location	GG02SD	GG01SD
Description	Background	Greenhorn Gulch
Target Analyte List Metals (mg/kg)		
Aluminum	**13700**	**11300**
Antimony	R	R
Arsenic	**7.9 JL**	**5.5 JL**
Barium	**232**	**220**
Beryllium	**0.97**	0.88 JQ
Cadmium	**0.23 JL**	0.24 JQ
Calcium	**6100**	**7810**
Chromium	**34.6**	**31.6**
Cobalt	**12.5**	8.4 JQ
Copper	**17.9**	**19.2**
Iron	**18400**	**16100**
Lead	**20.7**	**23**
Magnesium	**4920**	**4570**
Manganese	**783**	**538**
Mercury	0.063 U	0.2 U
Nickel	**19**	**16.5**
Potassium	**2130**	**2040**
Vanadium	**32.9**	**28.2**
Zinc	**66.6**	**105**

Note: Bold type indicates the sample result is above the instrument detection limit.

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ID = Identification.
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L = Low bias.
mg/kg = milligrams per kilogram.
The detected concentration is below the method reporting limit/Contract Required
Q = Quantitation Limit, but is above the method detection limit.
R = The data are unusable. Tha analyte may or may not be present in the sample.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table 6-8 Greenhorn Gulch Surface Water Samples Analytical Results Summary

EPA Sample ID	08254139	08254046
CLP Sample ID	MJ97C4	MJ9731
Station Location	GG02SW	GG01SW
Description	Background	Greenhorn Gulch
Target Analyte List Metals (mg/L)		
Calcium	**21000**	**35800**
Iron	**132**	69.1 JQ
Magnesium	4020 JQ	**10800**
Manganese	5.5 JQ (SQL = 15 U)	**38.5**
Sodium	4670 JQ	**5180**
Water Quality Parameters		
Temperature (^{o}C)	7.4	17.5
pH	9.08	8.41
Conductivity (mS/cm)	0.139	0.299
Dissolved Oxygen (mg/L)	11.36	6
Turbidity (NTU)	NR	NR
Salinity (%)	0	0.01

Note: Bold type indicates the sample result is above the instrument detection limit.
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ID = Identification.
J = The associated value is an estimated quantity.
mg/L = milligrams per liter.
mS/cm = milliSiemens per centimeter.
NR = Not recorded.
NTU = Nephelometric Turbidity Units.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
SQL = Sample quantitation limit.

Table 6-9 Wetland Sediment Samples Analytical Results Summary

EPA Sample ID	08254071	08254137	08254135	08254136	08254134	08254133	08254132	08254131	08254130	08254129	08254138
CLP Sample ID	MJ9756	MJ97C2	MJ97C0	MJ97C1	MJ97B9	MJ97B8	MJ97B7	MJ97B6	MJ97B5	MJ97B4	MJ97C3
Station Location	BG02SD	WD09SD	WD07SD	WD08SD	WD06SD	WD05SD	WD04SD	WD03SD	WD02SD	WD01SD	WD10SD
Description	Background	Release Samples									
Target Analyte List Metals (mg/kg)											
Aluminum	**9800**	**10200**	**5680**	**6130**	**6060**	**7920**	**6060**	**9160**	**7620**	**6450**	**4620**
Antimony	R	R	R	R	R	R	R	R	R	R	R
Arsenic	**6.9**	**8.2**	**8**	1.5 JQ	2.1 U	**5.9**	**2.4**	2.8 U	**4.2**	**4.2**	**4.0**
Barium	**110**	**142**	**130**	**92.1**	**82.4**	**173**	**128**	**147**	**125**	**141**	**130**
Cadmium	0.36 JQ (SQL = 0.79 U)	**1.0 JH**	0.67 JQ	0.60 JQ	0.64 JQ	**1.0 JH**	**0.9 JH**	**1.7 JH**	**1.2 JH**	0.83 JQ	0.44 JQ
Calcium	**6240**	**6500**	**4370**	**8370**	**6260**	**8960**	**6980**	**8400**	**6350**	**8580**	**4890**
Chromium	**32.2**	**29.8**	**20.2**	**20.1**	**19.7**	**23.2**	**17**	**25.0**	**19.2**	**19.0**	**15.6**
Copper	**10.8**	**13.8**	**11.7**	**12.6**	**9.7**	**16.8**	**11.4**	**19.2**	**15.1**	**12.1**	**7.9**
Iron	**14300**	**14500**	**11300**	**10400**	**7910**	**12200**	**8880**	**11600**	**10900**	**10200**	**8630**
Lead	**18.5**	**42.4**	**25.8**	**21.5**	**20.8**	**28.4**	**26.0**	**41.2**	**20.0**	**24.1**	**16.3**
Magnesium	**5940**	**6040**	**4790**	**4950**	**4490**	**6260**	**4360**	**5970**	**4230**	**5320**	**4050**
Manganese	**255**	**323**	**162**	**110**	**66.2**	**206**	**131**	**124**	**212**	**176**	**139**
Nickel	**19.5**	**19.6**	**16.6**	**17.5**	**17.3**	**23.4**	**15.1**	**21.7**	**17.8**	**17.9**	**14.7**
Potassium	**1270**	**1390**	701 JQ	797 JQ	689 JQ	**1070**	**829**	1220 JQ	**1730**	**922**	607 JQ
Vanadium	**23.8**	**24.4**	**21.6**	**22.7**	**21.5**	**28.0**	**19.3**	**27.2**	**22.3**	**21.7**	**18.0**
Zinc	**65.6 JL**	**176**	**79.8**	**91**	**89.3**	**119**	**111**	**185**	**102**	**106**	**69.0**

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Table 6-10 Wetland Surface Water Samples Analytical Results Summary

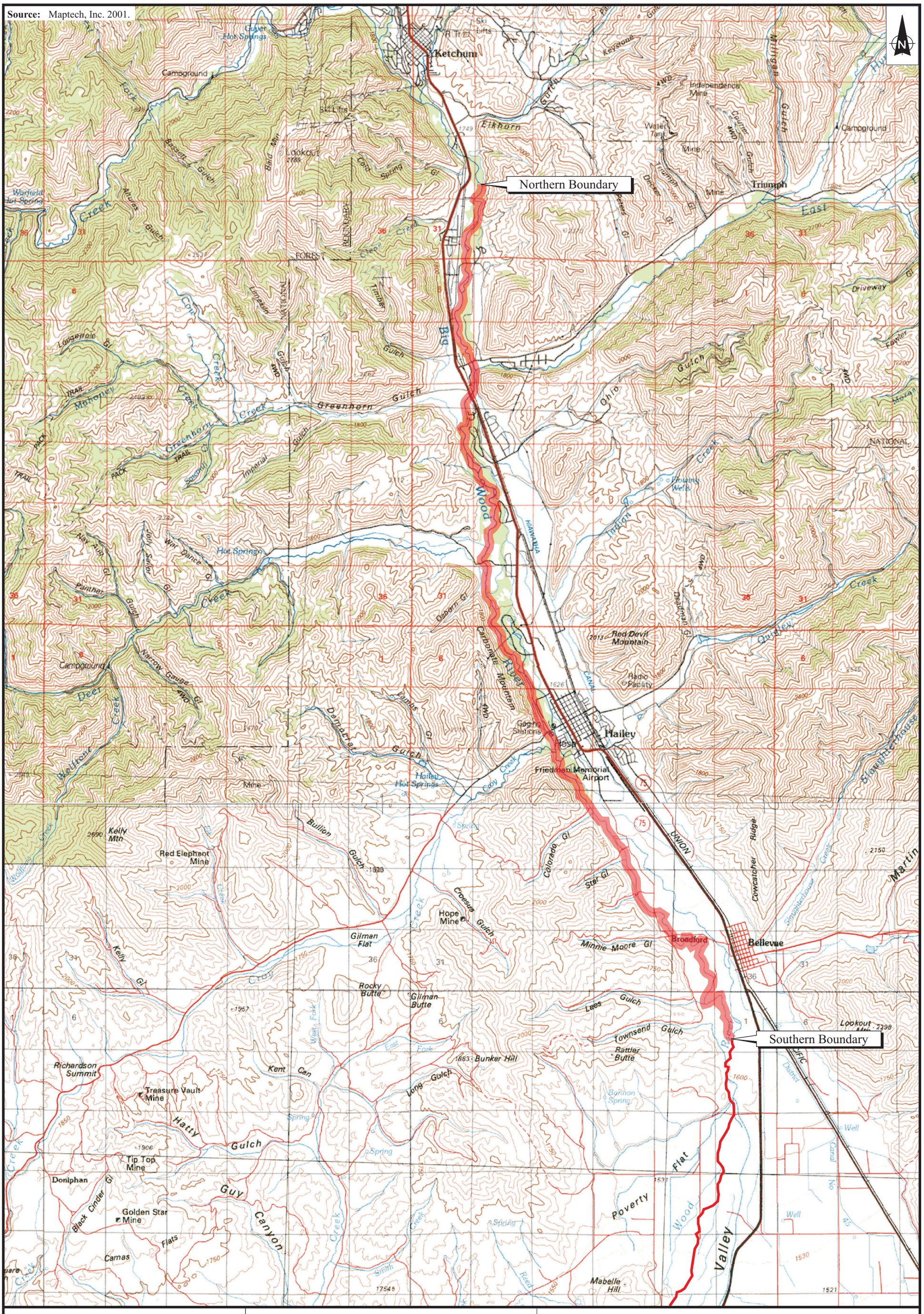
EPA Sample ID	08254001	08254059	08254060	08254061	08254062	08254063	08254064	08254065	08254066	08254067	08254068
CLP Sample ID	MJ96Y6	MJ9744	MJ9745	MJ9746	MJ9747	MJ9748	MJ9749	MJ9750	MJ9751	MJ9752	MJ9753
Station Location	BG02SW	WD01SW	WD02SW	WD03SW	WD04SW	WD05SW	WD06SW	WD07SW	WD08SW	WD09SW	WD10SW
Description	Background										
Target Analyte List Metals (mg/L)											
Aluminum	174 JQ	**416**	45.8 JQ	105 JQ	**433**	145 JQ	12.2 JQ	17.2 JQ	21.7 JQ	75.8 JQ	22.2 JQ
Calcium	**23500**	**27800**	**48800**	**27100**	**27900**	**25700**	**46800**	**29200**	**42900**	**23800**	**48500**
Iron	137 U	**370**	23.2 JQ	92.1 JQ	**355**	**139**	26 JQ	100 U	26.7 JQ	55.8 JQ	**348**
Magnesium	3180 JQ	**5600**	**9430**	**5310**	**5540**	**5080**	**11700**	**6120**	**9170**	3200 JQ	**9740**
Manganese	5.5 JQ (SQL = 15 U)	**17.6**	15 U	8.8 JQ	11.5 JQ	12.2 JQ	15 U	4.4 JQ	**17.6**	5.3 JQ	**109**
Sodium	1720 JQ	2460 JQ	**5540**	2230 JQ	2550 JQ	2210 JQ	**5520**	3020 JQ	4750 JQ	2060 JQ	**6030**
Water Quality Parameters											
Temperature (^{o}C)	8	9	13.2	12.8	11	12.5	15.1	9.3	8.8	7.7	14.1
pH	7.79	8.84	8.31	8.81	9.13	9	8.48	8.05	8.22	9.2	8.01
Conductivity (mS/cm)	0.147	0.169	0.298	0.164	0.164	0.165	0.337	0.191	0.27	0.136	0.314
Dissolved Oxygen (mg/L)	8.19	10.98	7.16	4.19	11.1	11.86	9.02	2.91	2.46	12.86	4.38
Turbidity (NTU)	10	10	10	5	7	10	10	NR	46	NR	37
Salinity (%)	0	0	0.01	0	0	0	0	0	0.01	0	0.01

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Source: Maptech, Inc. 2001.



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BIG WOOD RIVER Blaine County, Idaho	Figure 6-1 SURFACE WATER MIGRATION PATHWAY TDL (NORTHERN SECTION)		
	0 .75 1.5 Approximate Scale in Miles	Date: 1/15/09	Drawn by: AES	10:START-3\07-05-0010\fig 6-1

Source: Maptech, Inc. 2001.

Southern Boundary

15-Mile Target Distance Limit

ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BIG WOOD RIVER Blaine County, Idaho	Figure 6-2 SURFACE WATER MIGRATION PATHWAY TDL (SOUTHERN SECTION)		
	0 .75 1.5 Approximate Scale in Miles	Date: 1/15/09	Drawn by: AES	10:START-3\07-05-0010\fig 6-2

7 Summary and Conclusions

This investigation was designed to determine whether contamination from mining activities in areas drained by tributaries to the Big Wood River was impacting downstream resources such as fisheries and wetlands. The Big Wood River is located in the south central portion of Idaho in the Big Wood River Valley. The portion of the Big Wood River that was the focus of this SI begins at the confluence of Warm Springs Creek with the Big Wood River at the northern boundary and concludes at the confluence of Townsend Gulch with the Big Wood River at the southern boundary. Mining has historically occurred at locations drained by tributaries that feed this stretch of the Big Wood River.

The Big Wood River is listed under the Clean Water Act as a 303(d) water body. Water quality pollutants of concern on the Main Stem of the Big Wood River include: Suspended sediments, substrate sediments, total phosphorus, and pathogens (*Escherichia coli*).

The SI field sampling event was conducted from June 16, 2008 through June 19, 2008. A total of 109 samples, including five background surface water samples and five background sediment samples were collected for the SI.

7.1 Sources

Possible sources of contamination to the Big Wood River and its tributaries are various mines located throughout this watershed. These mine sources were not investigated as a part of this SI. Rather, the SI was intended to determine which tributaries to the Big Wood River are contributing to metals contamination in the river. Mines on these tributaries may be investigated separately in the future.

7.2 Targets

Fishing is known to occur in the Big Wood River in the study area; however, fish catch figures are not maintained. Locations used for consumption fishing could not be confirmed although some fishing for consumption is known to occur. Additionally, a total of 9.7 miles of wetland frontage occur along the Big Wood River.

Metals contamination to sediments were present in consecutive sample locations BR20SD to BR26SD; spanning approximately two miles of the Big Wood River. Minnie Moore Gulch drains to the Big Wood River within this area of contamination and sediments from this stream contained some of the highest concentrations of metals for the tributaries sampled. Star Gulch, also containing some of the highest metals concentrations in tributary sediments, drains to the Big

Wood River approximately 0.6 mile upstream of this two mile stretch of river. Samples were not collected immediately downstream of this gulch on the Big Wood River; hence the nearest downstream sediment sample to this gulch is sample BR26SD. It is likely that this gulch is partially responsible for the elevated concentrations observed in the Big Wood River along this stretch of contamination. Approximately 2.9 miles of wetlands frontage are subject to actual contamination between sample points BR20SD and BR26SD.

Another other area of the Big Wood River contained metals contamination in sediments. This area was at sediment sample BR31SD. Although this sample is immediately downstream of Elkhorn Gulch, this gulch did not contain similar metals contamination.

Surface water samples from the Big Wood River for the most part did not contain metals contamination; the single exception being manganese in surface water sample BR08SW. Independence Creek and Greenhorn Gulch also contained manganese in surface water at elevated concentrations.

Wetland sediment samples WD02SD through WD05SD, and WD09SD contained cadmium contamination; and wetland surface water samples WD01SW, WD08SW, and WD10SW contained manganese contamination. Approximately 5.4 miles of wetland frontage exists between sample points WD10SD and WD09SD. This length of wetland frontage overlaps with the frontage described above as being present between sample points BR20SD and BR26SD.

7.3 Conclusions

Sampling for the SI on the Big Wood River and its tributaries demonstrate that the river has been impacted by metals contamination originating in tributaries to the river. In particular, Minnie Moore Gulch and Star Gulch sediments are markedly higher in metals than other tributary sediments. Sediment samples collected downstream of these tributaries on the Big Wood River are affected. In total, approximately 5.4 miles of wetland frontage are subject to actual contamination. Further, consumption fishing may be occurring in areas that contain actual contamination. Based on the findings of this SI, further investigation under CERCLA is recommended.

8 References

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United States Geological Survey, (USGS), January 14, 2009, *Surface-Water Annual Statistics for the Nation, USGS 13139510 Big Wood River at Hailey, Idaho Total Flow, 2006.*

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A Sample Plan Alteration Form

SAMPLE PLAN ALTERATION FORM

Project Name and Number: Big Wood River

Technical Direction Document Number: 07-05-0014

Material to be sampled: Surface water at the downstream Parker Gulch location, Mammoth Gulch, Minnie Moore Gulch, and Star Gulch. Also surface water and sediment in Indian Creek, Quigley creek, Slaughterhouse Creek, Water Gulch, and Ohio Gulch.

Measurement Parameters: Surface water for TAL metals and mercury analysis.

Standard Procedure for Field Collection & Laboratory Analysis (cite references): Sample collection and analytical methods were not modified.

Reason for Change in Field Procedure of Analytical Variation: No water was present at certain sample locations on Parker Gulch, Mammoth Gulch, Minnie Moore Gulch and Star Gulch. For this reason, a surface water sample was not collected at these points. Five stream proposed for sampling at the rate of one sample per stream were not samples since they could not be located. Four new streams were submitted. One of these streams (Parker Gulch) was sampled at two locations.

Variation from Field or Analytical Procedure: A surface water sample was not collected at the downstream location on Parker Gulch, Mammoth Gulch, Minnie Moore Gulch or in Star Gulch. Streams not sampled were replaced with other streams in the study area. The streams not sampled include Indian Creek, Quigley Creek, Slaughterhouse Creek, Water Gulch, and Ohio Gulch. The replacement streams were Parker Gulch (two locations), Independence Creek, Clear Creek, and Lee's Gulch.

Special Equipment, Materials, or Personnel Required: None.

Contact:	Approved Signature	Date
Initiator:	Renee L'Nordeen	
START PL:	Linda E. Castello	
EPA TM:		
EPA QA Officer:		

B Field Sample Collection Data Sheets

Sample Team: DH + AM Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BG01

Water Quality Parameters"

Flow rate	100-1000 cfs/gpm	**DO (mg/L)**	8.74
Temp (° C)	7.3	**Turb (NTU)**	10
pH:	7.89	**Salin (%)**	0
Cond (mS/cm)	0.141	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: chocolate

Grain Size: fine / silty

Organic Content: ☐ none ☐ slight ☑ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

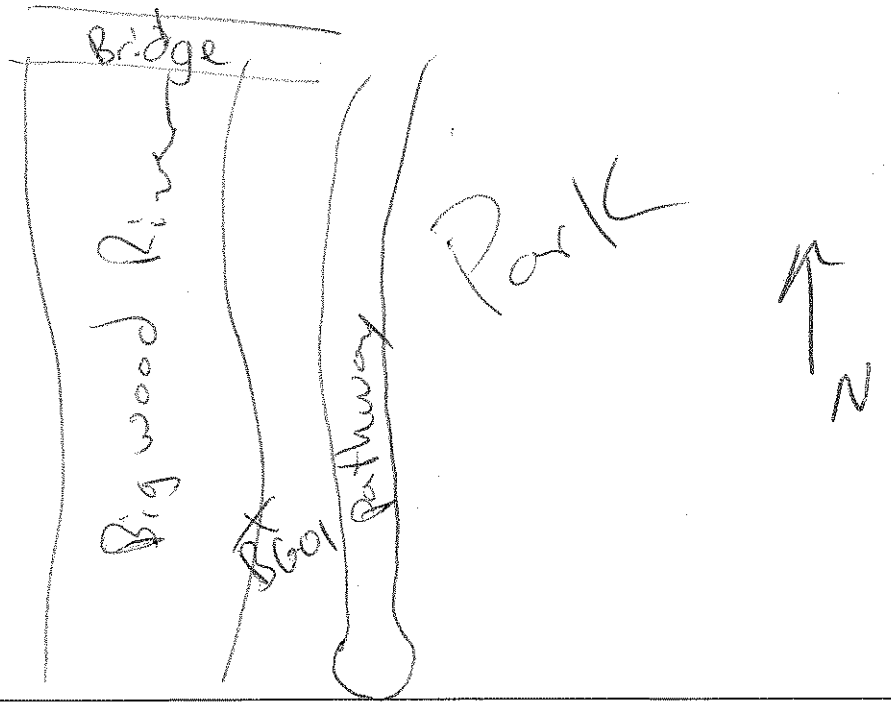
Sample Location:

Latitude: 43.686549 Longitude: -114.371800

Photographs:

File No.	Time	Dir	Description
101-1933	1100	W	Sample location BG01
101-1934	1100	DWN	Sample (SD + SW)

Site Sketch:



SW MJ9475 08254000

SD MJ9755 08254070

Sample Team: JH + AM Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☒ Stream Name: Warm Springs Creek WC01

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	7.13
Temp (° C)	14.3	**Turb (NTU)**	10
pH:	7.83	**Salin (%)**	0
Cond (mS/cm)	0.169	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dark Brown

Grain Size: Fine sand w/ silt

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

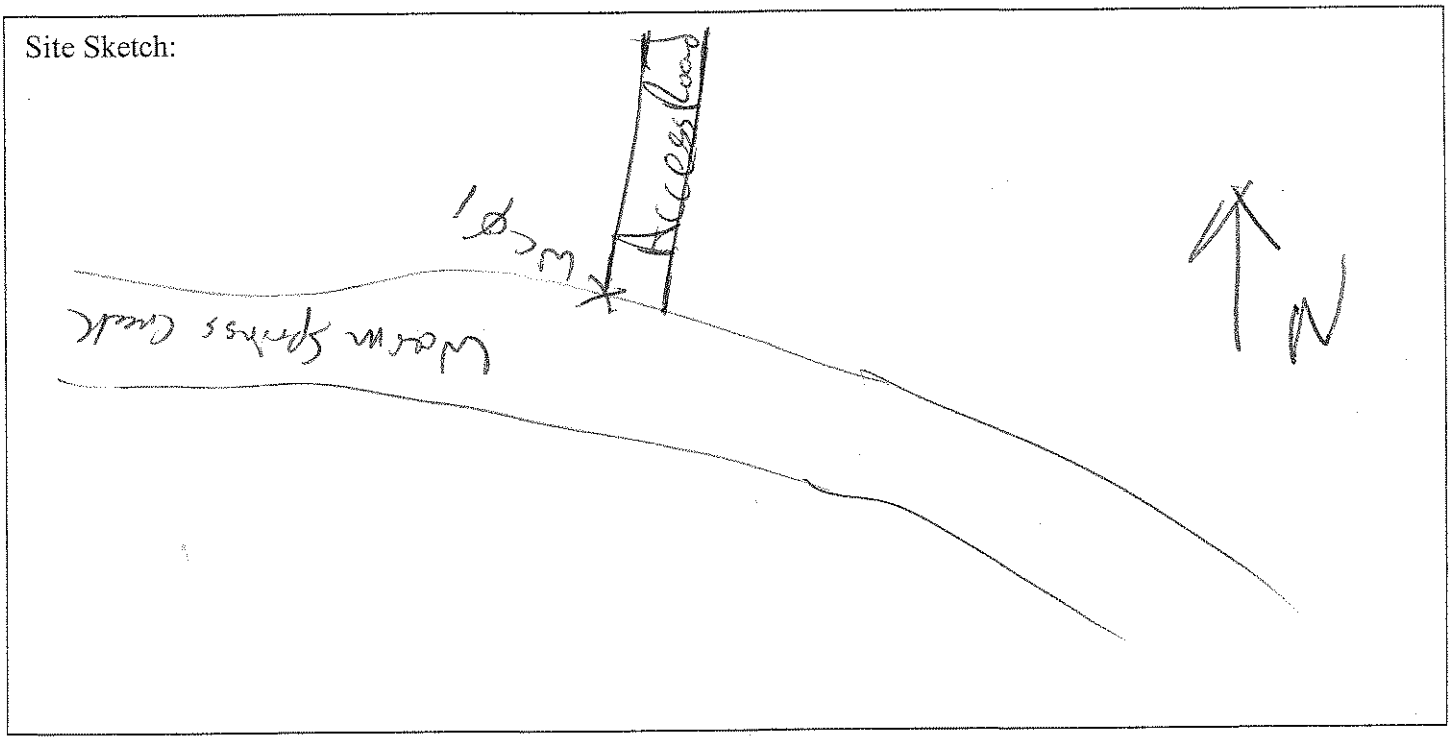
Sample Location:

Latitude: 43.688414 Longitude: -114.381256

Photographs:

File No.	Time	Dir	Description
1937	1355	S	Sample location WC01
1938	1355	Down	SD + SW sample

Site Sketch:



SW ~~MJ9727~~ (R) 08254058
MJ9743

SD MJ9783 08254128

Sample Team: JH+AM Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR35

Water Quality Parameters"

Flow rate	102.7 cfs/gpm	**DO (mg/L)**	8.25
Temp (° C)	10.6	**Turb (NTU)**	0
pH:	8.09	**Salin (%)**	0.09
Cond (mS/cm)	0.104	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: Tan

Grain Size: Fine/Medium Sand w/ gravel & cobbles

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: Taken from deposition bank

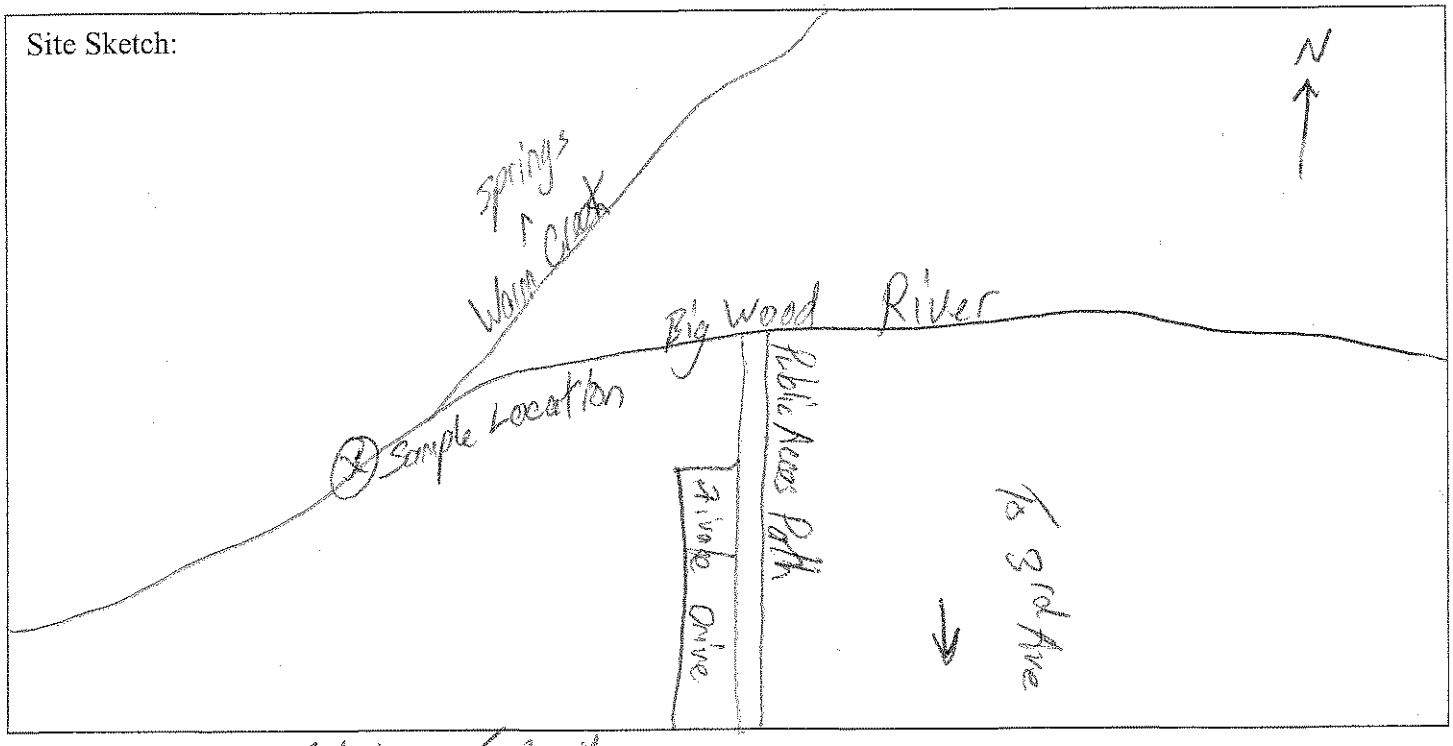
Sample Location:

Latitude: 43.680496 Longitude: 114.376383

Photographs:

File No.	Time	Dir	Description
1939 ~~1938~~	1425	W	Sample Location BR35
1940 ~~1939~~	1425	down	Water Lead Sample

Site Sketch:



Sampled by: Josh Hancock SW - MJ9723 08254038

SD MJ9793 08254108

Sample Team: JN + AM SAMPLER: JN Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR34

Water Quality Parameters"

Flow rate	1000+ cfs/gpm	**DO (mg/L)**	8.08
Temp (° C)	11.7	**Turb (NTU)**	10
pH:	8.02	**Salin (%)**	0
Cond (mS/cm)	0.152	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: ~~Fine sand w/ silt~~ AM Dark Brown

Grain Size: fine sand w/ silt

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: _____

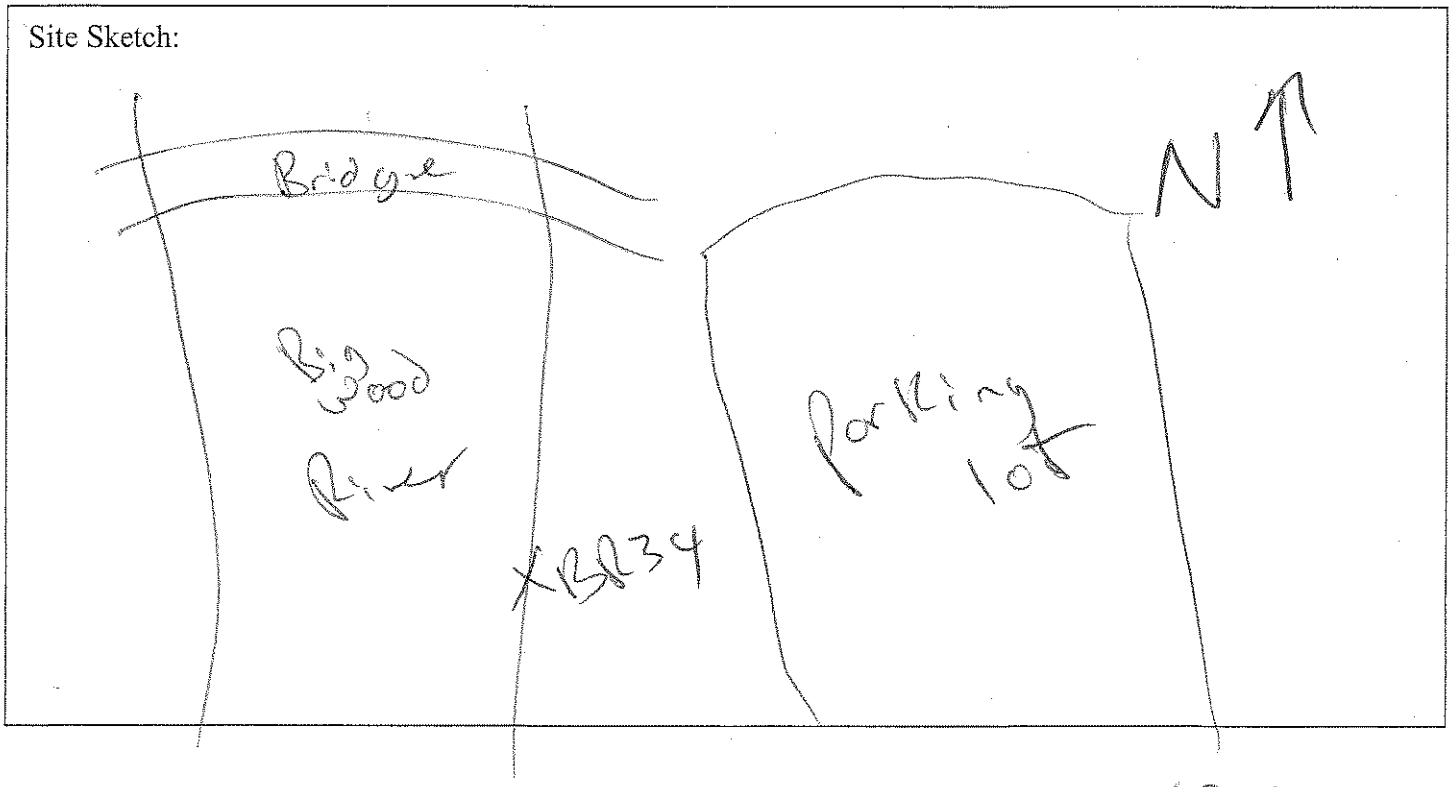
Sample Location:

Latitude: 43.670681 Longitude: -114.305599

Photographs:

File No.	Time	Dir	Description
1941	1510	W	sample location BR34
1942	1510	Down	SD/SW sample

Site Sketch:



SW MJ9722 08254037

SD MJ9792 08254037

Sample Team: JH + AM Sampler: JH Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Trail Creek TC01

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	8,54
Temp (° C)	9,2	**Turb (NTU)**	10
pH:	8,08	**Salin (%)**	0
Cond (mS/cm)	0.243	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: Dark Brown / Grey

Grain Size: silt w/ some medium sand

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description: _____

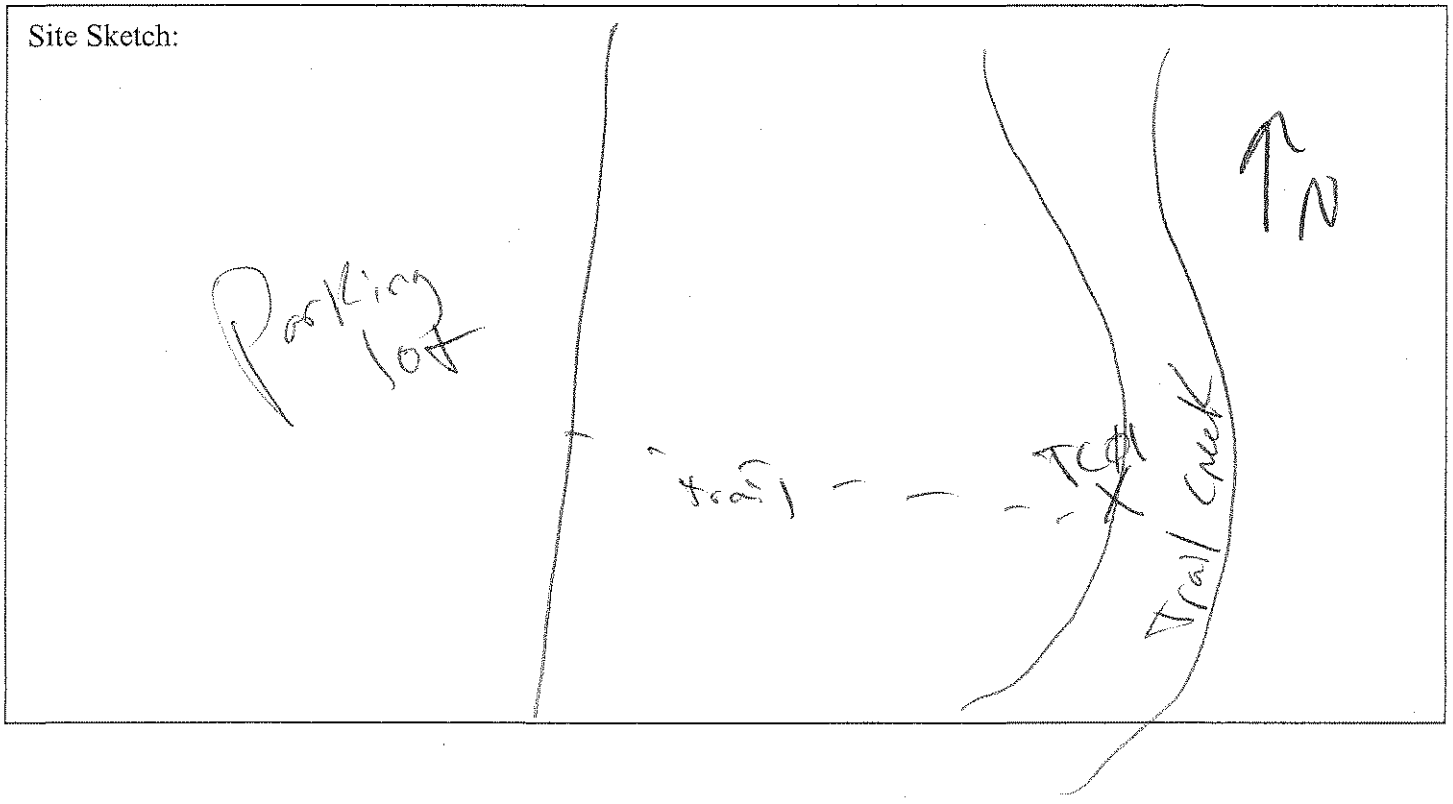
Sample Location:

Latitude: 43,671516 AM 7 Longitude: -114,360871

Photographs:

File No.	Time	Dir	Description
1943	1525	E	Sample location TC01
1944	1525	Down	SD/SW Sample

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR33

Water Quality Parameters"

Flow rate	1000+ cfs/gpm	**DO (mg/L)**	8.20
Temp (° C)	11.8	**Turb (NTU)**	10
pH:	8.2	**Salin (%)**	0
Cond (mS/cm)	0.165	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: medium brown

Grain Size: fine sand slight silt

Organic Content: ☐ none ☑ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

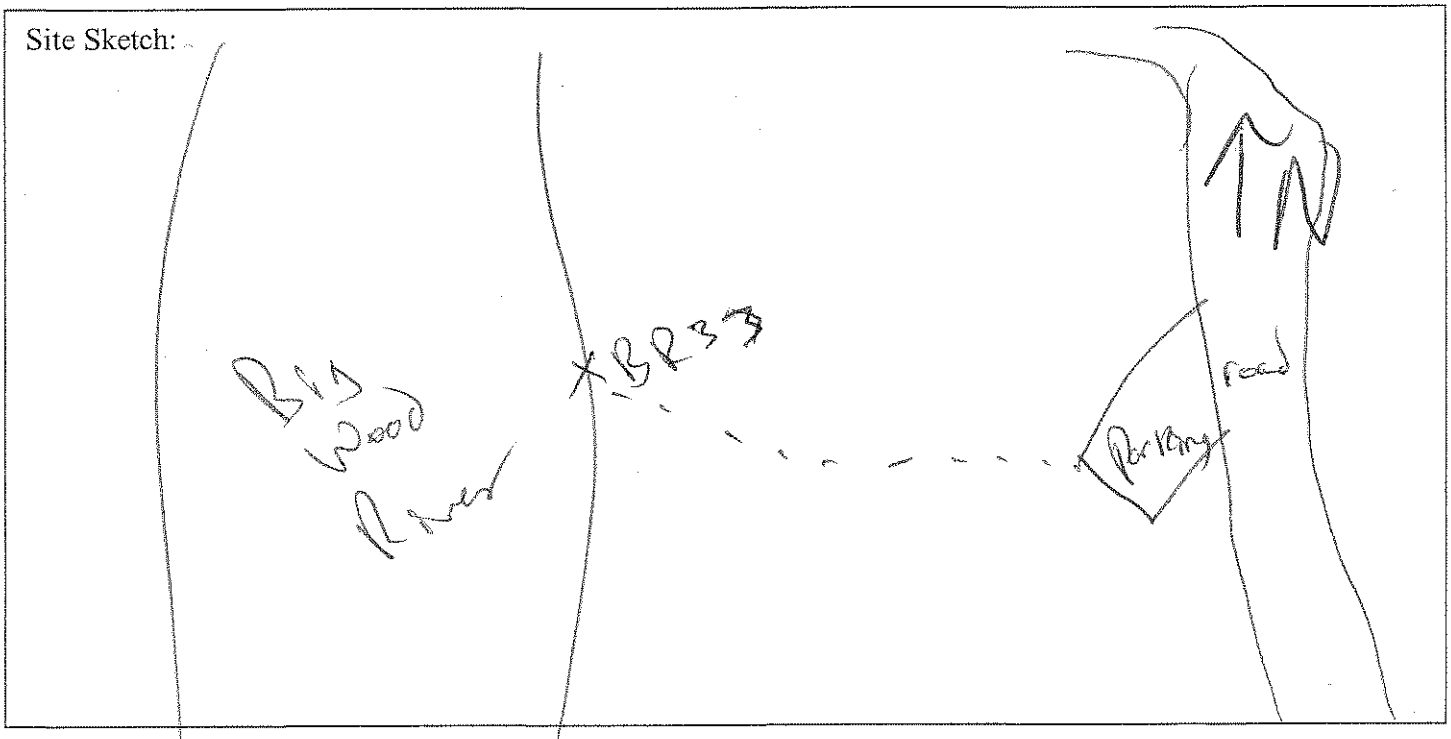
Sample Location:

Latitude: 43.660456 Longitude: -114.353804

Photographs:

File No.	Time	Dir	Description
1945	1550	W	Sample Location BR33
1946	1550	Dwn	SD/SW sample

Site Sketch:



Sample Team: JH & AM Sampler: JH Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR32

Water Quality Parameters"

Flow rate	1000+ cfs/gpm	**DO (mg/L)**	7.89
Temp (° C)	11.9	**Turb (NTU)**	~10
pH:	8.23	**Salin (%)**	0
Cond (mS/cm)	0.178	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: light brown

Grain Size: med grain sand some silt

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☒ yes ☐ No Description: methane slight

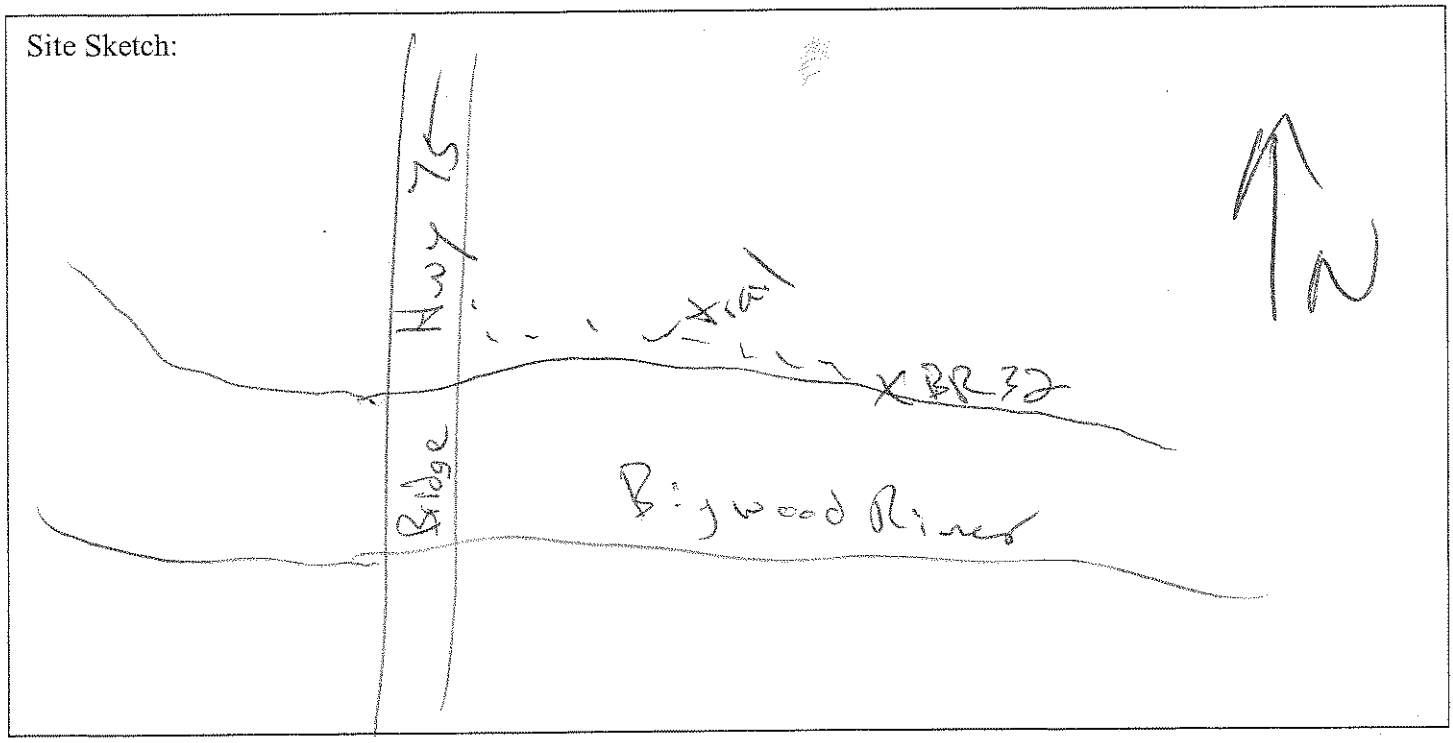
Sample Location:

Latitude: 43.459034 Longitude: -114.347478

Photographs:

File No.	Time	Dir	Description
1947	1645	S	Catch and release only sign
1948	1650	S	Sample location BR32
1949	1650	Dwn	SD & SW sampling

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Elkhorn Gulch Creek EC01

Water Quality Parameters"

Flow rate	10-100 cfs/gpm	**DO (mg/L)**	8.6
Temp (° C)	17.1	**Turb (NTU)**	~10
pH:	8.73	**Salin (%)**	0.01
Cond (mS/cm)	0.355	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: ~~tan~~ AM light Brown

Grain Size: Course sand w/ cobbles

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: _____

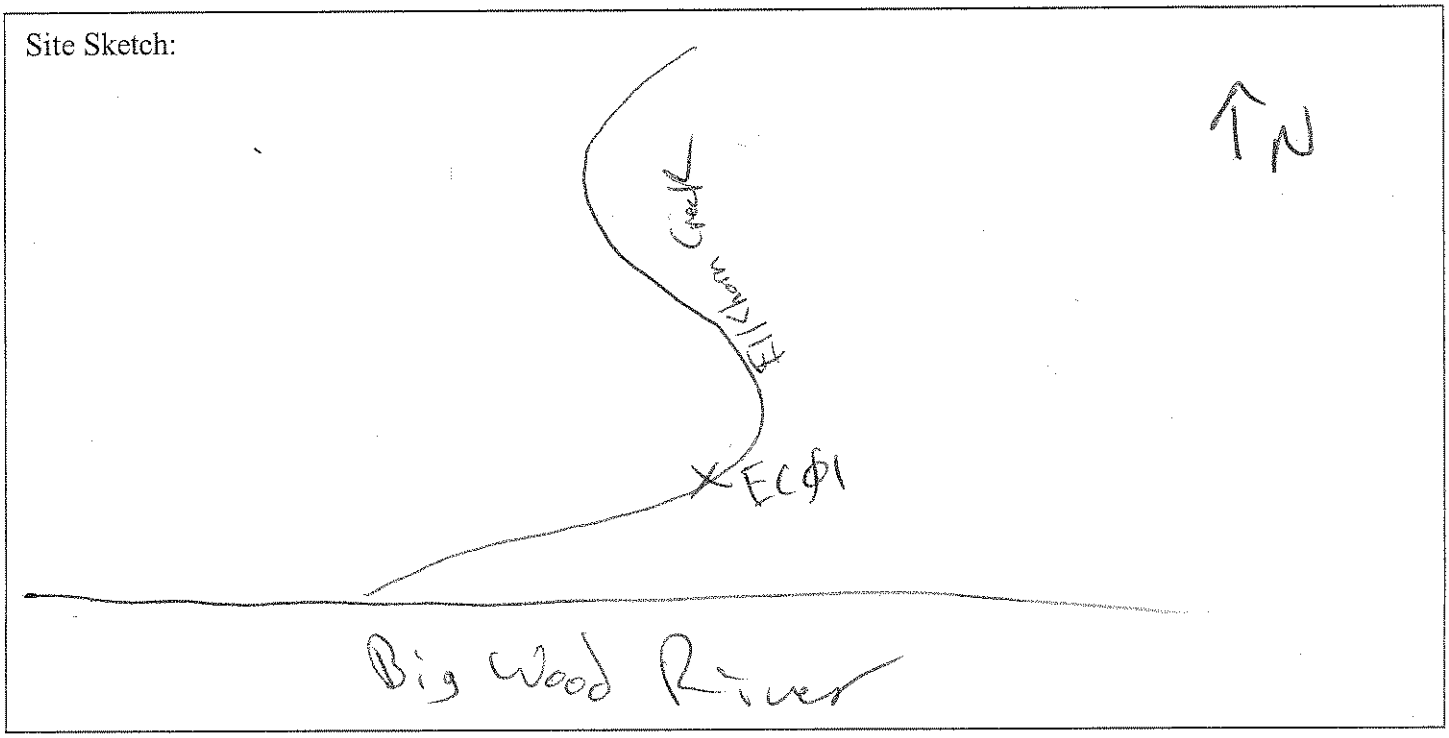
Sample Location:

Latitude: 43.653933 Longitude: -114.346089

Photographs:

File No.	Time	Dir	Description
1950	~~1200~~ AM 1200	SE	Sample location EC01
1951	1220	Down	SO/SW Samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR31

Water Quality Parameters"

Flow rate	>1000+ ~~cfs~~/gpm	**DO (mg/L)**	8.19
Temp (° C)	12.2	**Turb (NTU)**	>10
pH:	8.1	**Salin (%)**	0
Cond (mS/cm)	0.173	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: dark brown / black > non-depositional river bank material

Grain Size: silt & clay

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

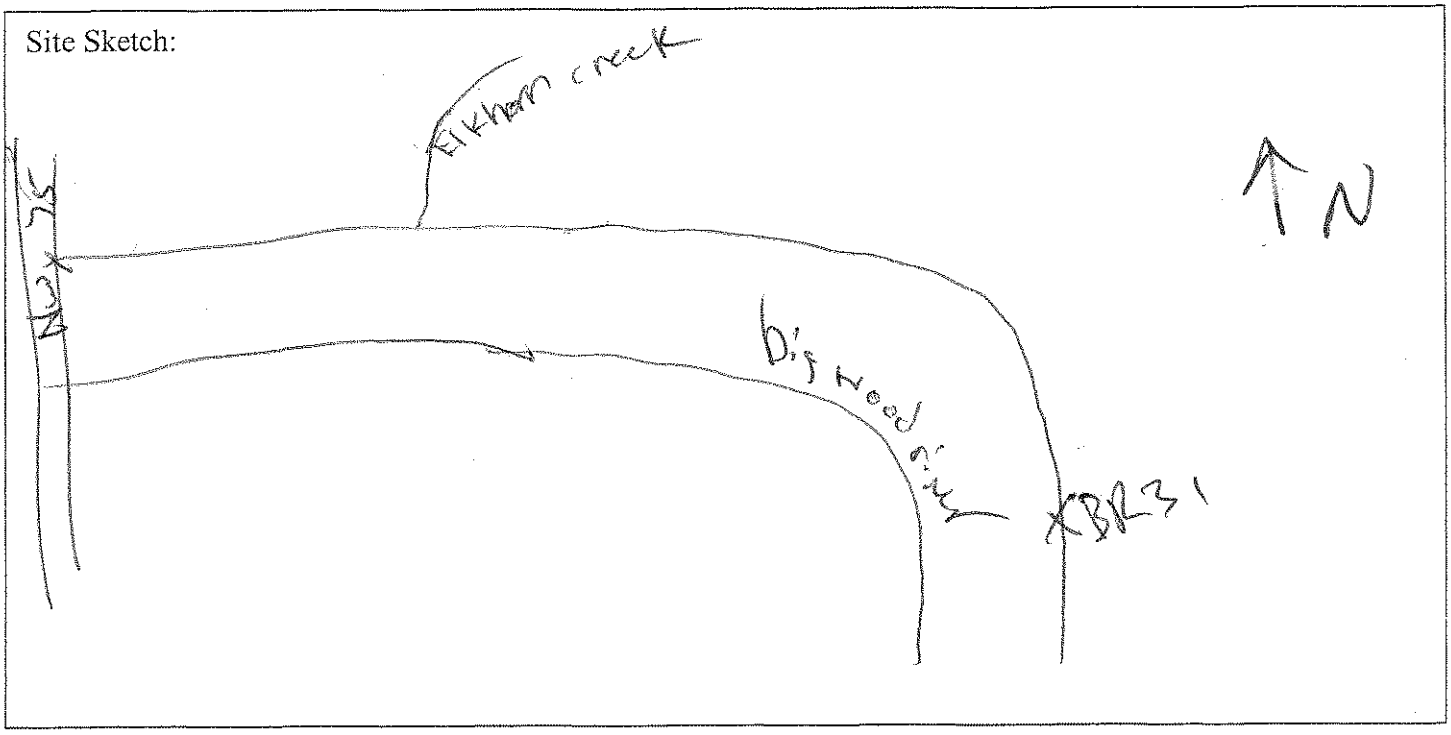
Sample Location:

Latitude: 43.653332 Longitude: -114.345323

Photographs:

File No.	Time	Dir	Description
1952	1740	W	Sample location BR31 AM
1953	1740	Dwn	SD/SW samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1510

Logbook Number/ Page: 1

☐ Wetland ☐ Stream Name: Clear Creek ~~CC01~~ AM RC01

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	8.5
Temp (° C)	19.3	**Turb (NTU)**	had reading ~5100
pH:	8.46	**Salin (%)**	0.01
Cond (mS/cm)	0.339	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☐ dry

Color: light brown

Grain Size: fine silt w/ coarse sand / some cobbles

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☐ No Description: _____

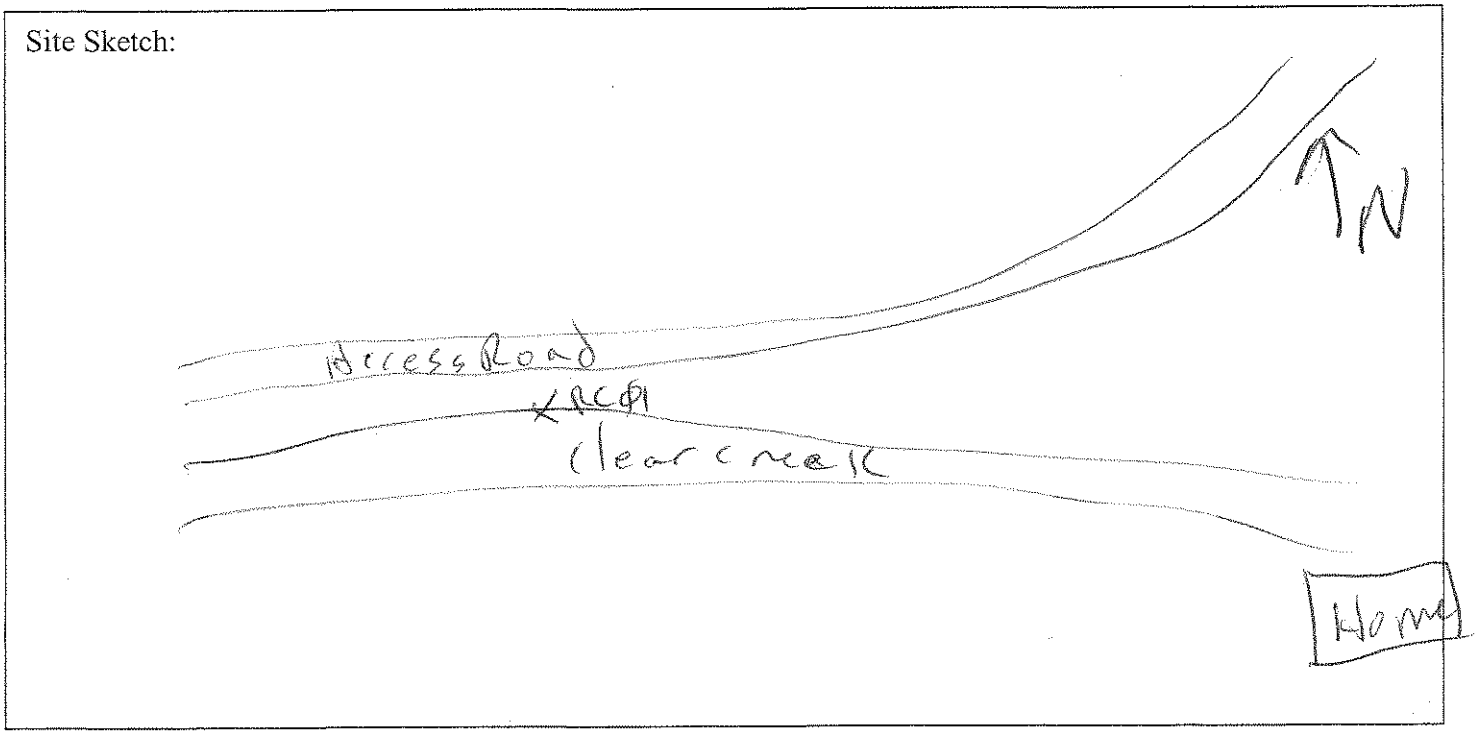
Sample Location:

Latitude: 43.639094 Longitude: -114.362918

Photographs:

File No.	Time	Dir	Description
2001	1510	SW	Sample location RC01
2002	1510	Down	SD/SW sample

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/17/08 0812

Logbook Number/ Page: _____/_____

☐ Wetland ☐ Stream Name: Big Wood River BR30

Water Quality Parameters"

Flow rate	1000 + cfs/gpm	**DO (mg/L)**	7.5
Temp (° C)	7.7	**Turb (NTU)**	79
pH:	7.38	**Salin (%)**	0
Cond (mS/cm)	0.181	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: medium/light brown

Grain Size: med grain sand

Organic Content: ☐ none ☑ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

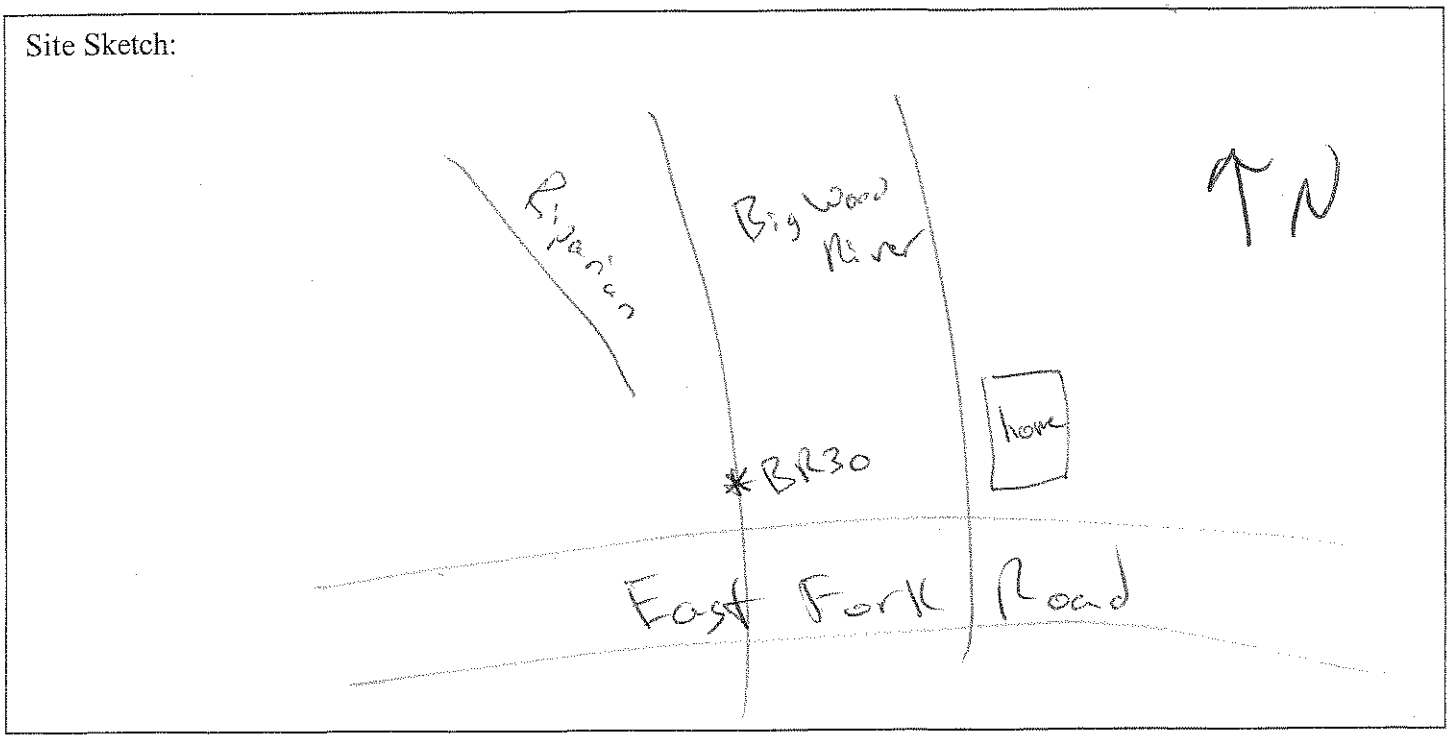
Sample Location:

Latitude: 43.605223 Longitude: -114.346875

Photographs:

File No.	Time	Dir	Description
1954	0812	E	Sample location BR30
1955	0812	Dwn	SD/SW samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/17/08 0840

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: East Fork Big Wood River ER01

Water Quality Parameters" 100-1000

Flow rate	~~10-100~~ **cfs/gpm**	**DO (mg/L)**	7.46
Temp (° C)	5.9	**Turb (NTU)**	Error in reading
pH:	8.03	**Salin (%)**	0
Cond (mS/cm)	0.143	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: silt + some fine sand 25 or dark brown

Grain Size: _____

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ ~~No~~ Description: _____

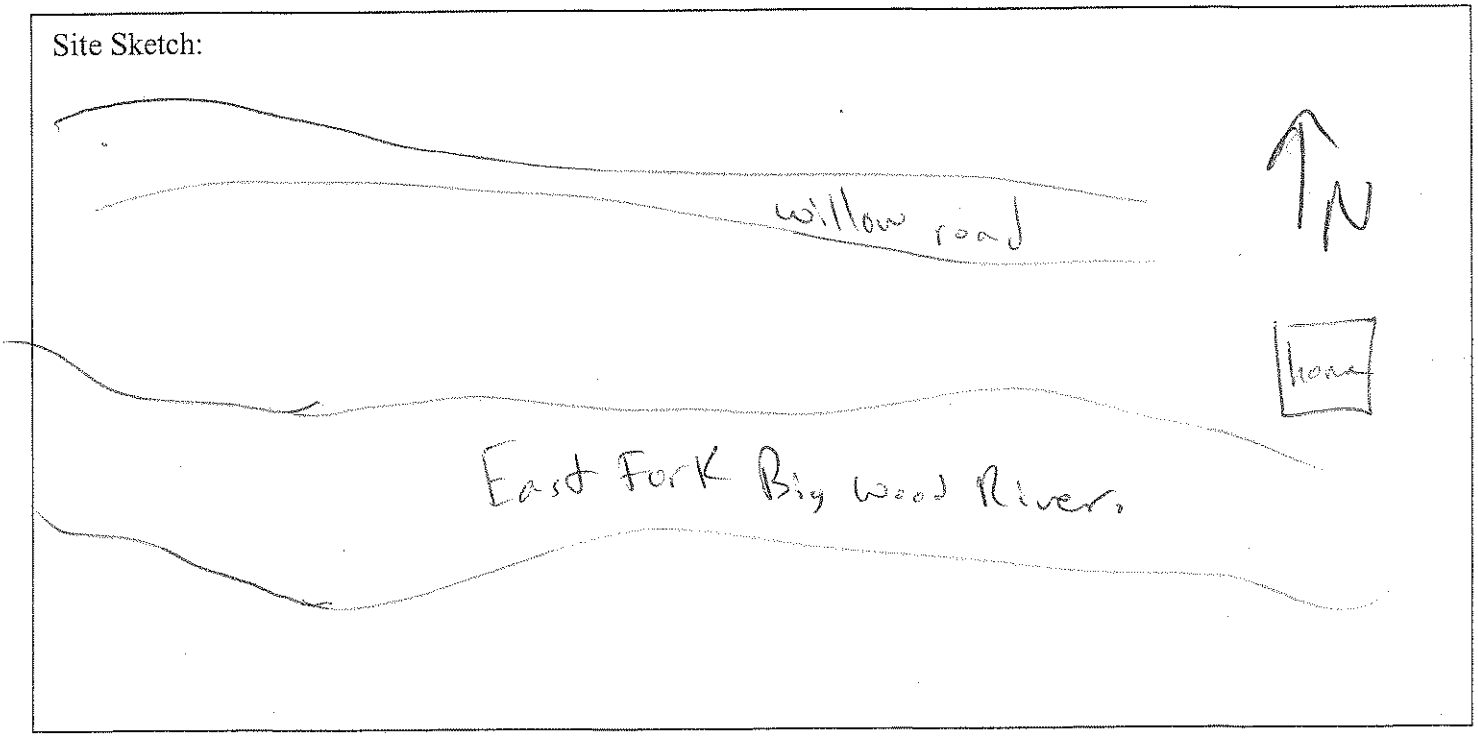
Sample Location:

Latitude: 43.603551 Longitude: -114.334656

Photographs:

File No.	Time	Dir	Description
1956	0840	S	Sample location at SW ER01
1957	0840	DWN	SD/SW Sample

Site Sketch:



Sample Team: JN + AM Sampler: JH Date: 6/17/08 0858

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR29

Water Quality Parameters"

Flow rate	1000+ cfs/gpm	**DO (mg/L)**	7.43
Temp (° C)	7.3	**Turb (NTU)**	bad reading
pH:	7.65	**Salin (%)**	0
Cond (mS/cm)	0.182	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: brown

Grain Size: fine sand w/ some silt

Organic Content: ☐ none ☐ slight ☑ moderate ☐ heavy

Odor? ☐ yes ☑ No Description:

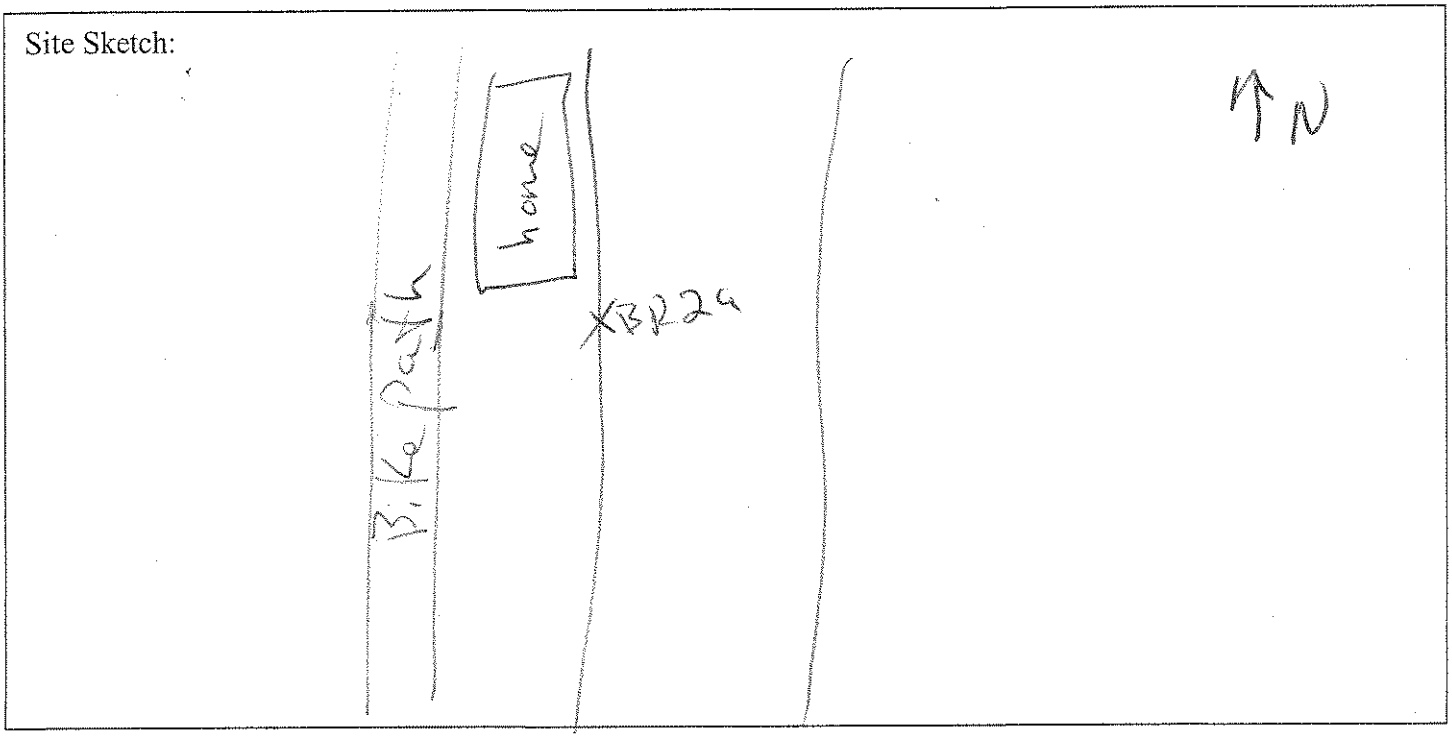
Sample Location:

Latitude: 43.599124 Longitude: -114.344862

Photographs:

File No.	Time	Dir	Description
1958	0858	E	Sample location BR29
1959	0858	Down	SO/SW samples

Site Sketch:



Sample Team: JH + AM Sample: JH Date: 6/17/08 1000

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR28

Water Quality Parameters"

Flow rate	1000 ± cfs/gpm	**DO (mg/L)**	7.38
Temp (° C)	7.5	**Turb (NTU)**	Band reading
pH:	8.03	**Salin (%)**	0
Cond (mS/cm)	0.183	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dark Brown

Grain Size: very fine sand w/ silt

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

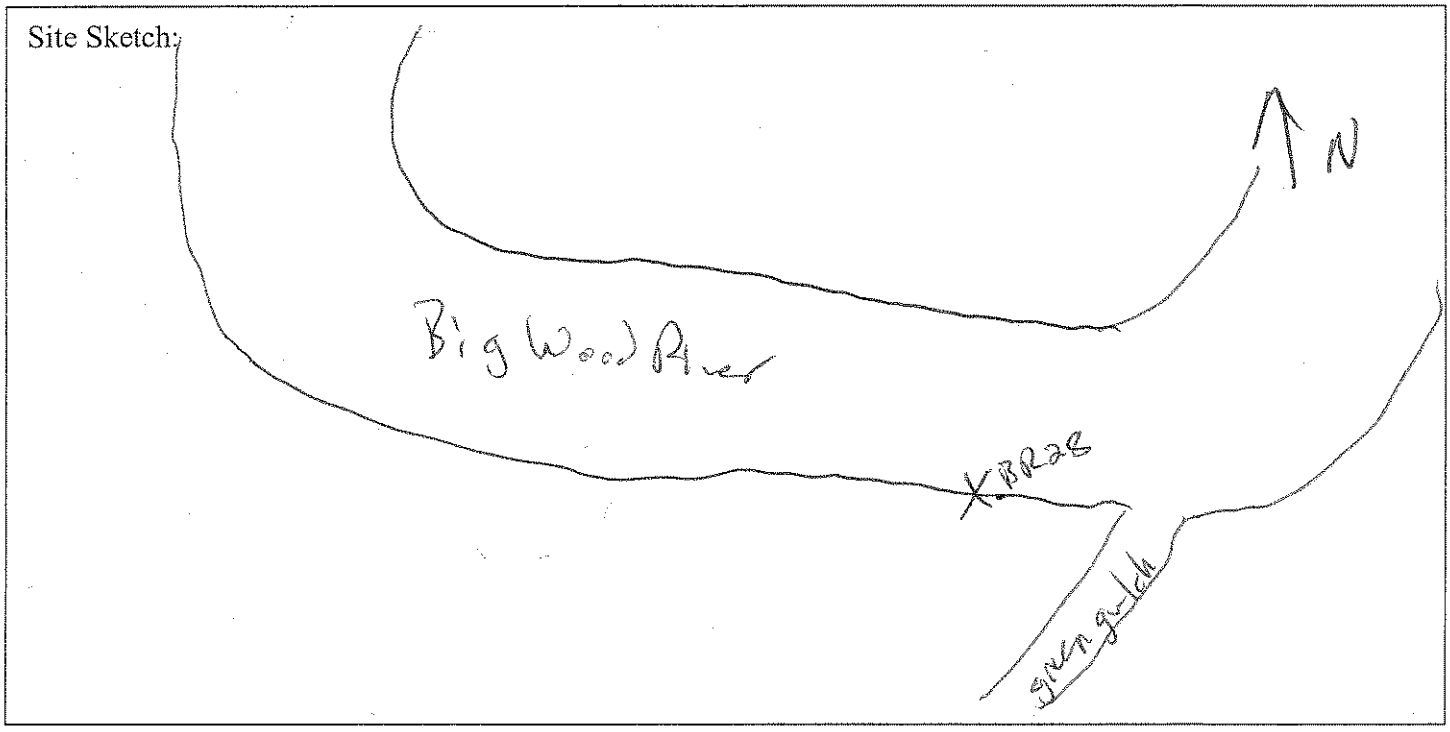
Sample Location:

Latitude: 43.589517 Longitude: -114.349749

Photographs:

File No.	Time	Dir	Description
1960	1000	E	Sample location BR28
1961	1000	Dwn	SD/sw samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/17/08 1010

Logbook Number/ Page: 1

☐ Wetland ☐ Stream Name: ~~Greenhorn Creek~~ Greenhorn Gulch GG01 ~~GC01~~ AM

Water Quality Parameters"

Flow rate	~~cfs~~/gpm	**DO (mg/L)**	6
Temp (° C)	17.5	**Turb (NTU)**	bad reading
pH:	8.41	**Salin (%)**	0.01
Cond (mS/cm)	0.299	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: dark brown

Grain Size: silt w/ some coarse sand & cobbles

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description:

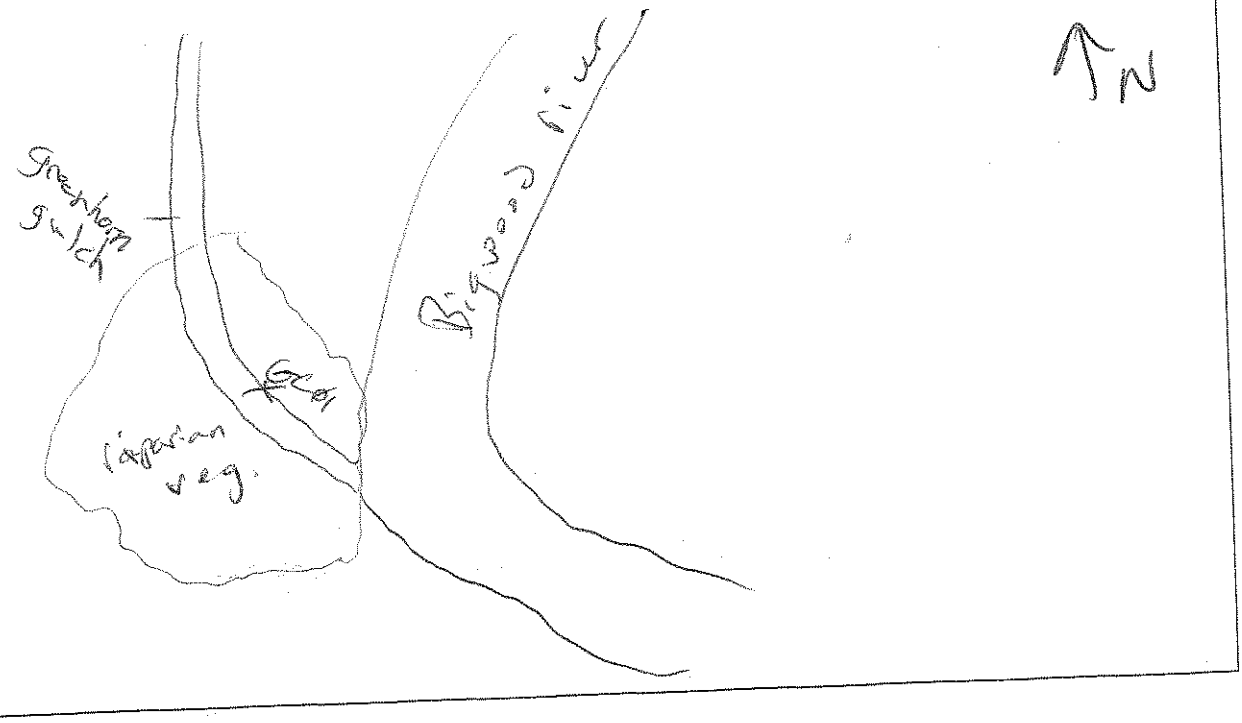
Sample Location:

Latitude: ~~43~~ AM 43.589395 Longitude: -114.350~~44~~ AM 167

Photographs:

File No.	Time	Dir	Description
1962	1010	S	Sample location GG01
1963	1010	Down	SD/SW samples

Site Sketch:



Sample Team: JH & AM Sampler: JH Date: 6/17/08 1100

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River BR27

Water Quality Parameters"

Flow rate	1000? cfs/gpm	**DO (mg/L)**	8.60
Temp (° C)	8.1	**Turb (NTU)**	bad reading
pH:	8.36	**Salin (%)**	0
Cond (mS/cm)	0.177	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: dark brown

Grain Size: fine sand w/ some silt and cobbles

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

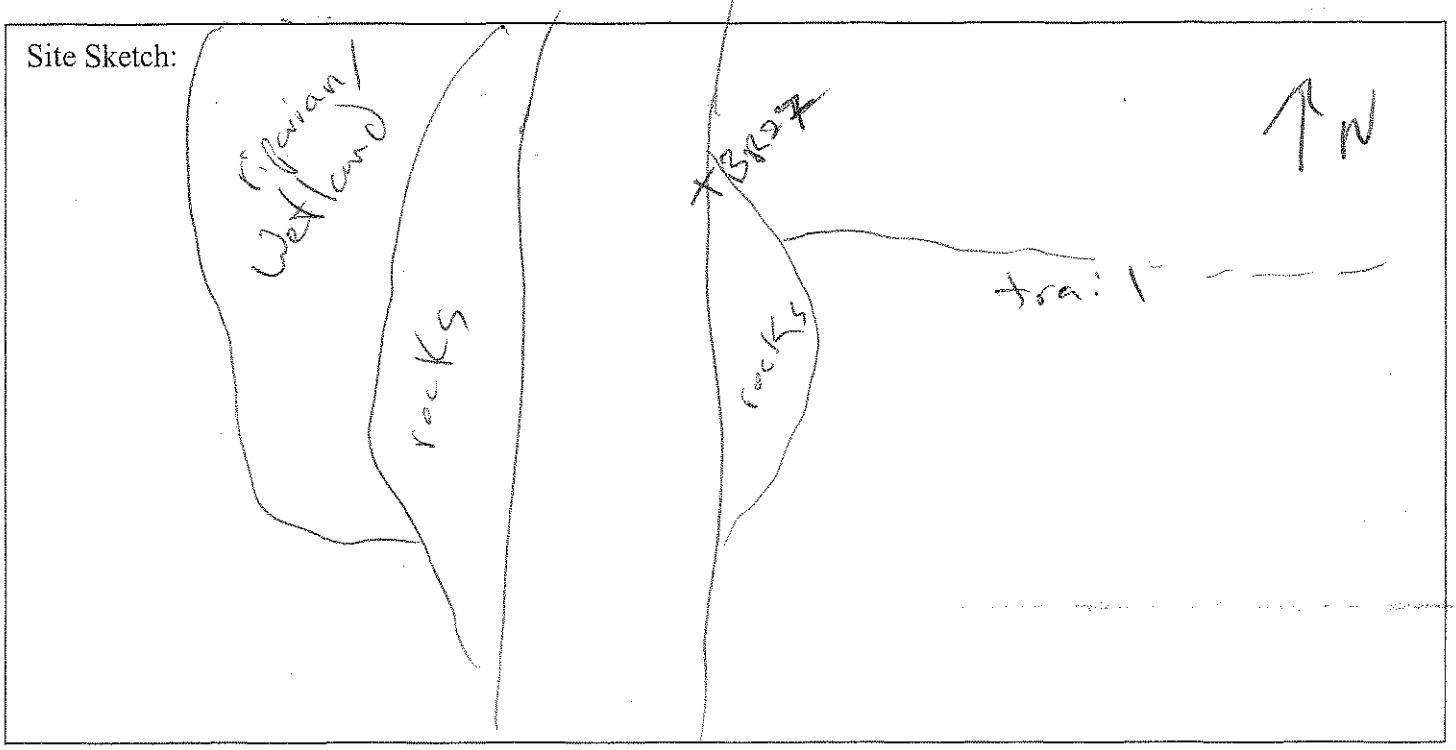
Sample Location:

Latitude: 43.586843 Longitude: -114.347215

Photographs:

File No.	Time	Dir	Description
1964	1100	W	Sample location BR27
1965	1100	Down	SD/SW sample

Site Sketch:



Sample Team: B CIEKO + T. LEHN Date: 06·17·08 18:00

Logbook Number/ Page: / BR08

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	BC 11.92
Temp (° C)	12.3	**Turb (NTU)**	117
pH:	8.96	**Salin (%)**	0.0
Cond (mS/cm)	0.158	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☐ dry

Color:_____

Grain Size: _____

Organic Content: ☐ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☐ No Description: _____

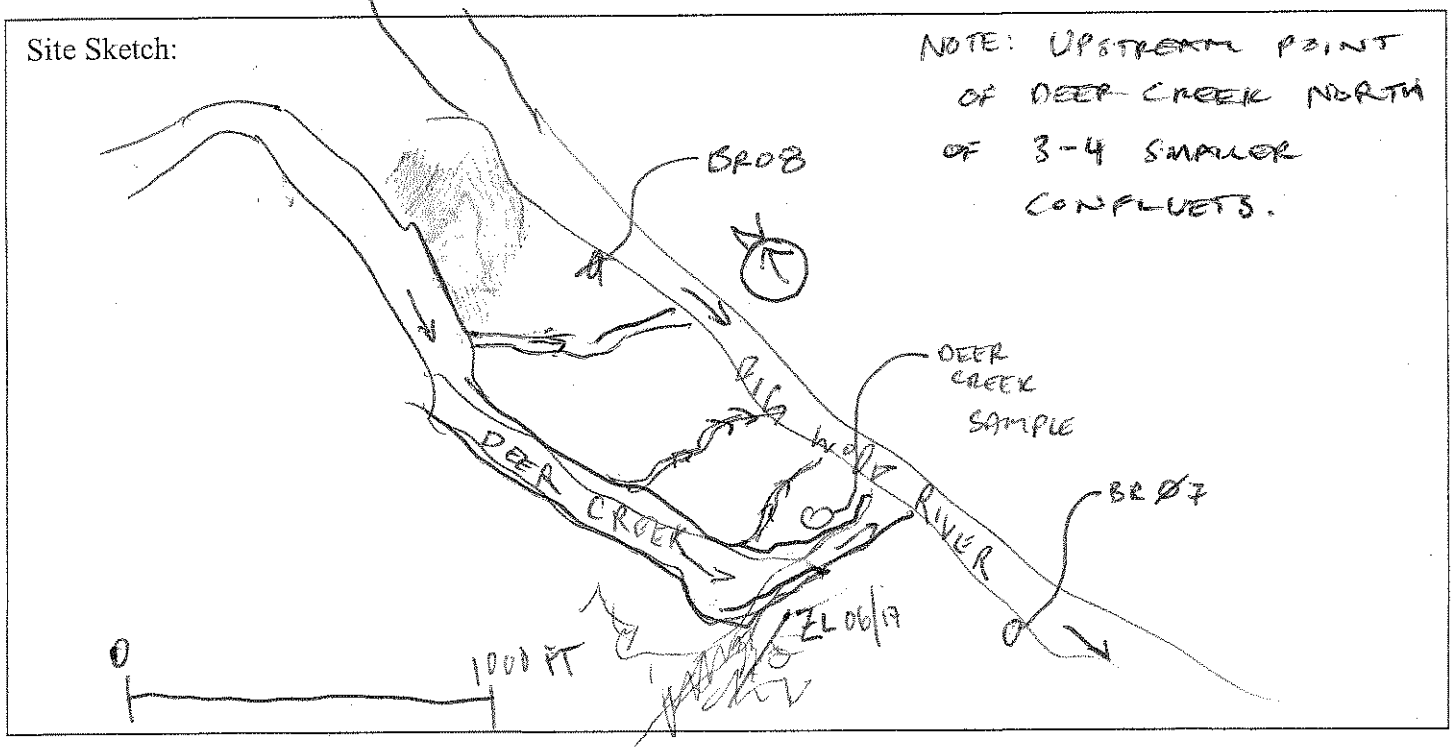
Sample Location:

Latitude: 43° 33' 17.516" N Longitude: 114° 20' 27.681" W

Photographs:

File No.	Time	Dir	Description
3735 IMG_4720	18:12	E	SAMPLE BR08
3736 IMG_4721	18:12	E	SAMPLE LOCATION

Site Sketch:



Sample Team: B. CIECKO & Z. LEHN Date: 06.17.08 17:44

DC #1

Logbook Number/ Page: /

☐ Wetland ☒ Stream Name: DEER CREEK

Water Quality Parameters"

Flow rate	< 10 cfs/gpm	**DO (mg/L)**	11.75
Temp (° C)	14.6	**Turb (NTU)**	40
pH:	8.2	**Salin (%)**	0.0
Cond (mS/cm)	0.263	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☐ dry

Color:

Grain Size:

Organic Content: ☐ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☐ No Description:

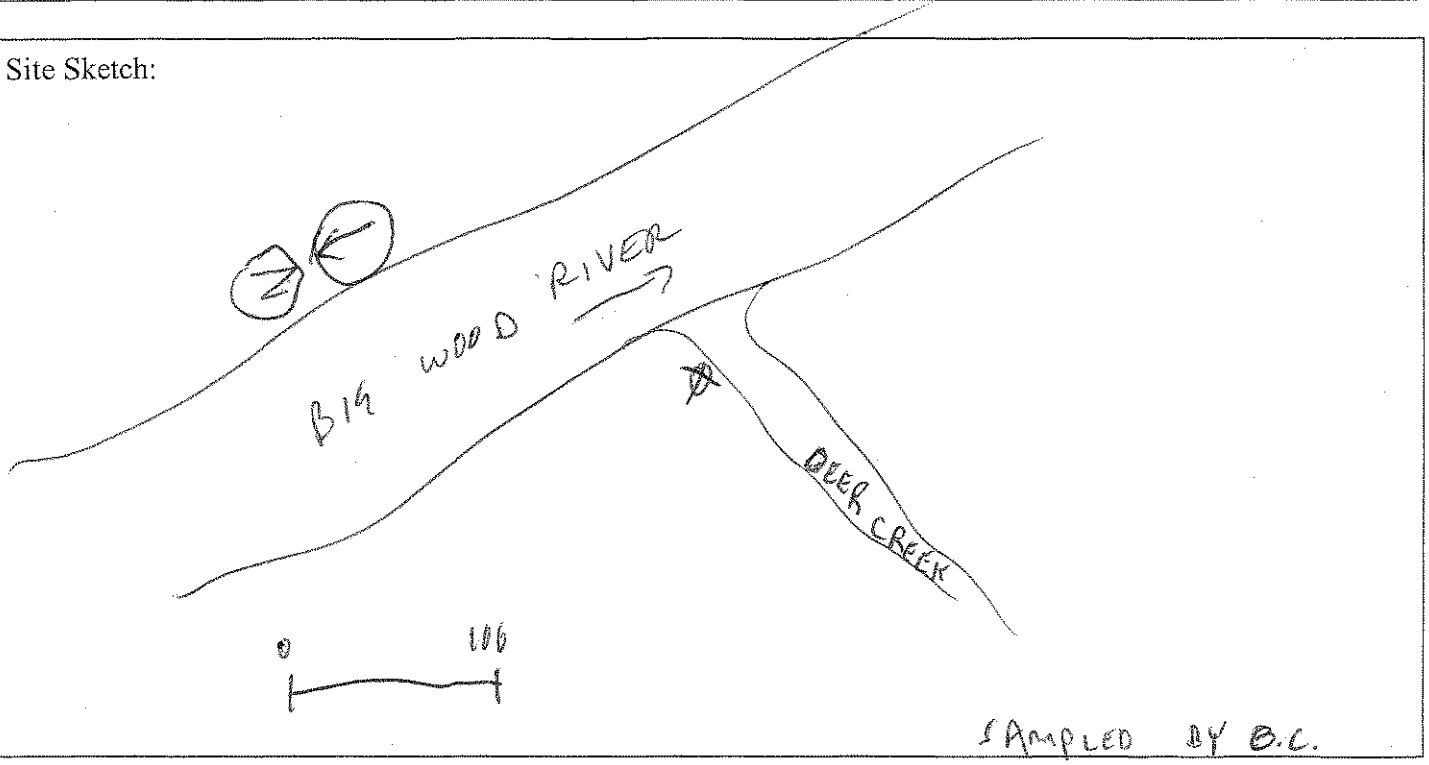
Sample Location:

Latitude: 43° 33' 11.713" N Longitude: 114° 20' 27.040" W

Photographs:

File No.	Time	Dir	Description
35 ~~2718~~	17:51	EAST	SAMPLE DC #1
36 ~~2719~~	17:51	SW	SAMPLE LOCATION

Site Sketch:



SAMPLED BY B.C.

Sample Team: ZECCA & B. CIECKO Date: 06.17.08

BR07 1731

Logbook Number/ Page: /

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	>1000 cfs/gpm	**DO (mg/L)**	12.26
Temp (° C)	13.1	**Turb (NTU)**	162
pH:	9.1	**Salin (%)**	0.0
Cond (mS/cm)	0.171	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: GREY

Grain Size: POORLY GRADED FINE TO MEDIUM SAND

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

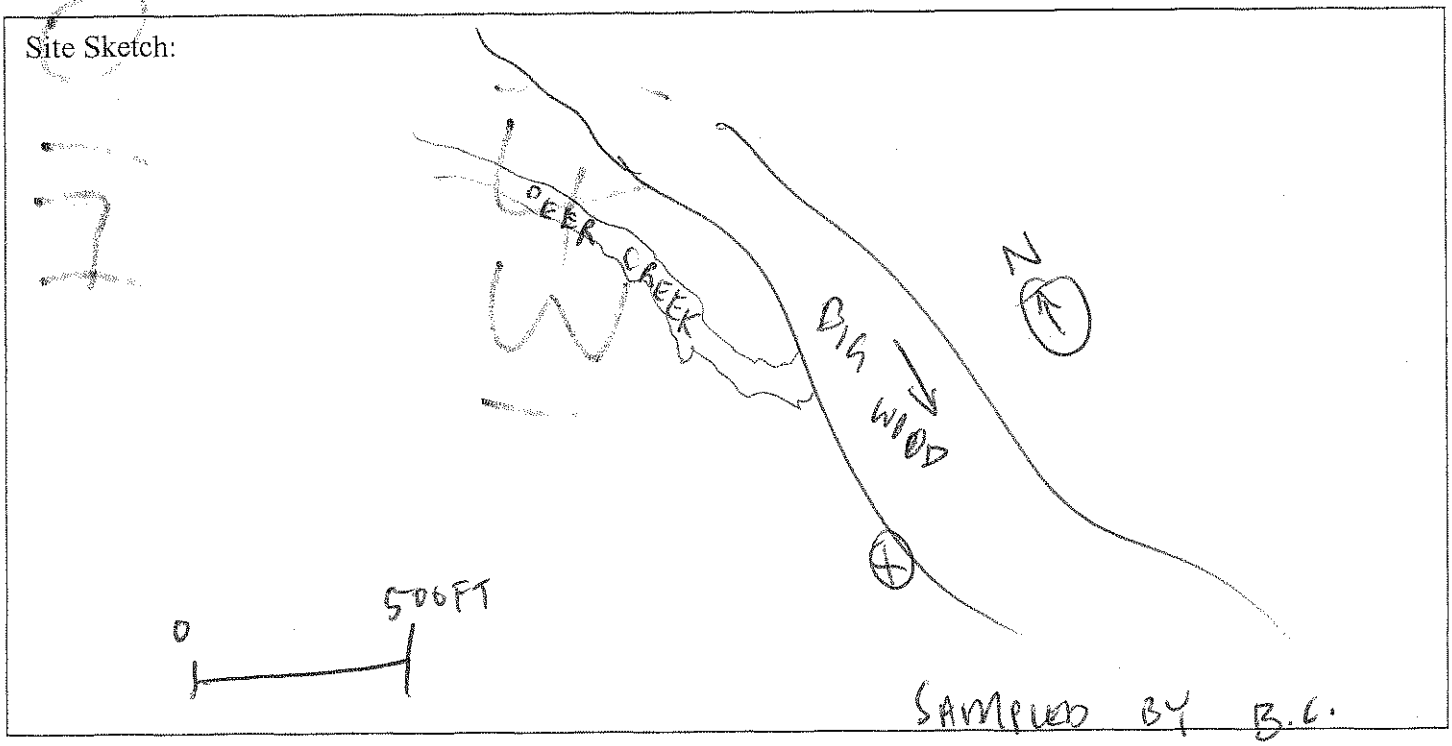
Sample Location:

Latitude: 43°33'9.894" N Longitude: 114°20'27.65" W

Photographs:

File No.	Time	Dir	Description
715	17:30	EAST	FISHERMAN NEAR MOUTH OF DEER CREEK
~~716~~ 3334	17:30	WEST	SAMPLE BR07
~~717~~ 3347	17:30	EAST	SAMPLE LOCATION

Site Sketch:



SAMPLED BY B.C.

Sample Team: ~~South Crew~~ BC & EL (BC & RL) Date: 6·17·08 13:50

Logbook Number/ Page: _____/_____ BR06

☐ Wetland ☒ Stream Name: BIG WOOD RIVER ✓

Water Quality Parameters"

Flow rate	71000 cfs/gpm	**DO (mg/L)**	11.67
Temp (° C)	11.2	**Turb (NTU)**	12
pH:	8.95	**Salin (%)**	0
Cond (mS/cm)	0.187	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: BROWN / GREY

Grain Size: POORLY GRADED (W/ SOME GRAVEL)

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: _____

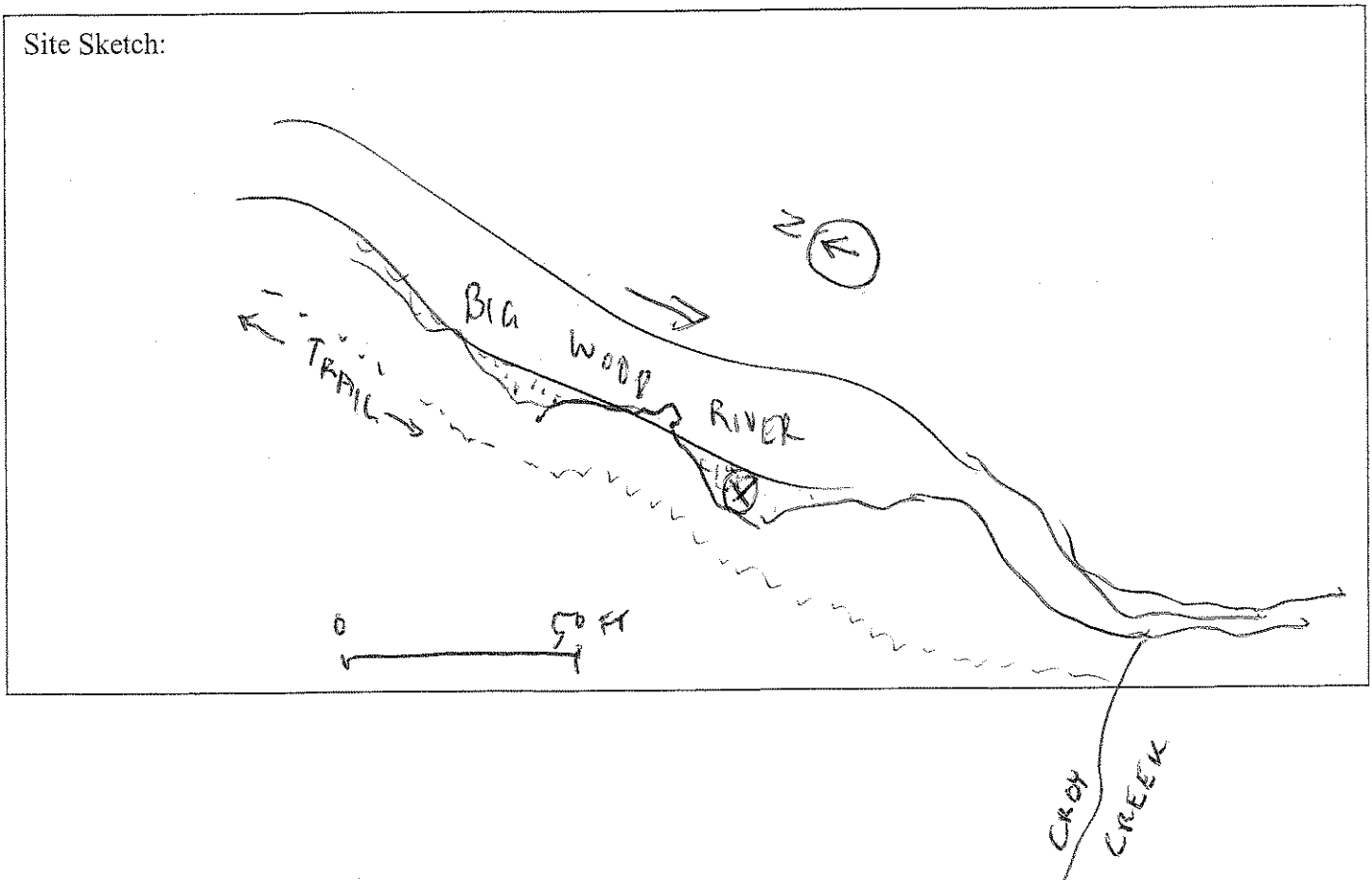
Sample Location:

Latitude: 43° 30' 47.656" N Longitude: 114° 19' 06.231" W

Photographs:

File No.	Time	Dir	Description
25 ~~IMG_708~~	14:00	S	SAMPLE
26 ~~IMG_709~~	14:00	E	SAMPLE LOCATION

Site Sketch:



Sample Team: BC + ZL ~~SOUTH CREW ZL~~ Date: 06.17.08 13:40

CC01

Logbook Number/ Page: _____/_____

☐ Wetland ☒ Stream Name: CROY CREEK

Water Quality Parameters"

Flow rate	<1000 (~~25-30~~) cfs/gpm	**DO (mg/L)**	11
Temp (° C)	15	**Turb (NTU)**	5
pH:	7.91	**Salin (%)**	0.01
Cond (mS/cm)	0.341	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: MEDIUM BROWN

Grain Size: MEDIUM GRAIN SAND TO SILT

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: _____

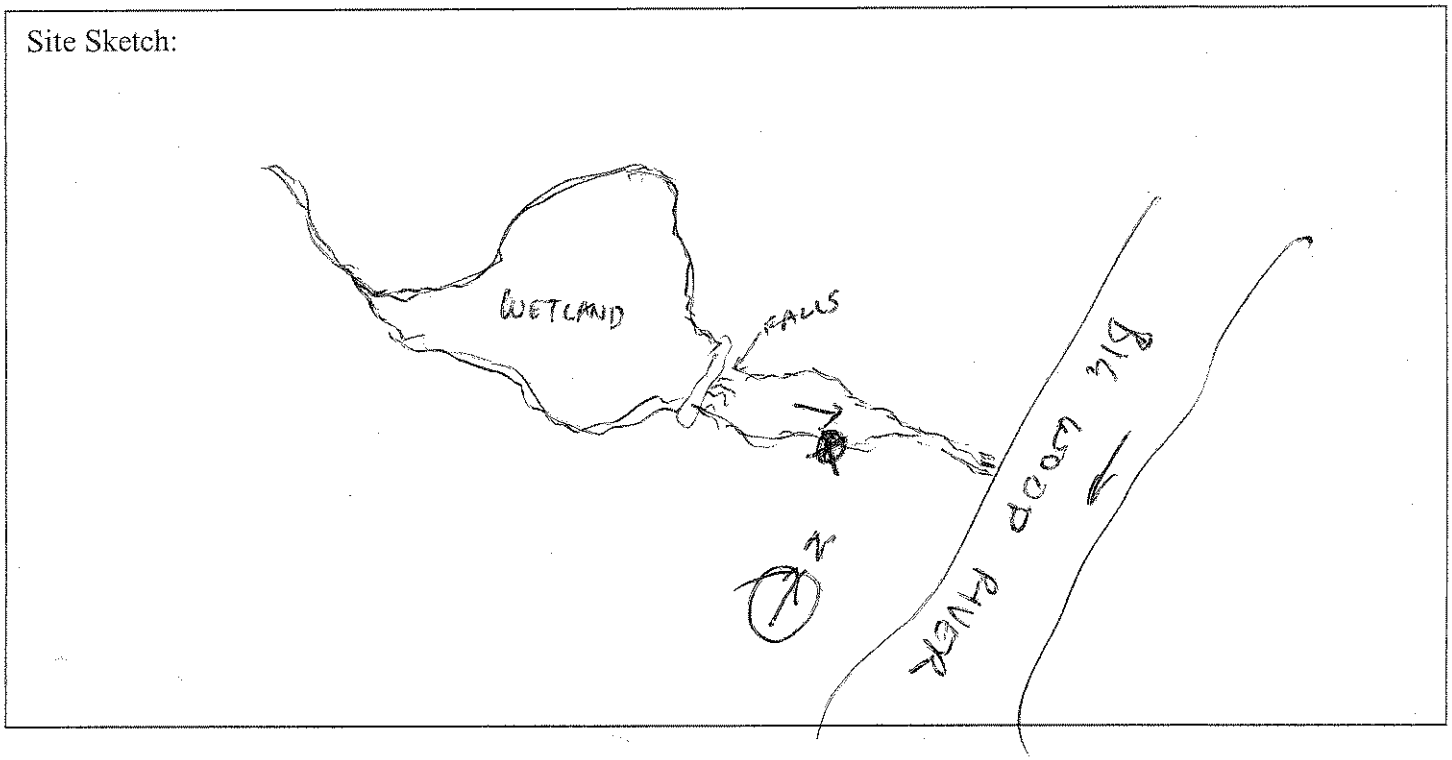
Sample Location:

Latitude: 43° 30' 45.337" N Longitude: 114° 19' 06.357 W

Photographs:

File No.	Time	Dir	Description
~~206~~ 23	1340	SOUTH	SAMPLE
~~207~~ 24	1340	NORTH	SAMPLE AREA

Site Sketch:



Sample Team: ~~SOUTH TEAM~~ BC + ZL ZL

Date: 06-17-08 13:10

BR05

Logbook Number/ Page: /

☐ Wetland ☒ Stream Name: BIG WOOD ✓

Water Quality Parameters"

Flow rate	>1000 cfs/gpm	**DO (mg/L)**	12.31
Temp (° C)	10.9	**Turb (NTU)**	81
pH:	8.95	**Salin (%)**	0
Cond (mS/cm)	0.179	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: GRAY

Grain Size: MEDIUM GRAVEL AND MEDIUM SAND

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

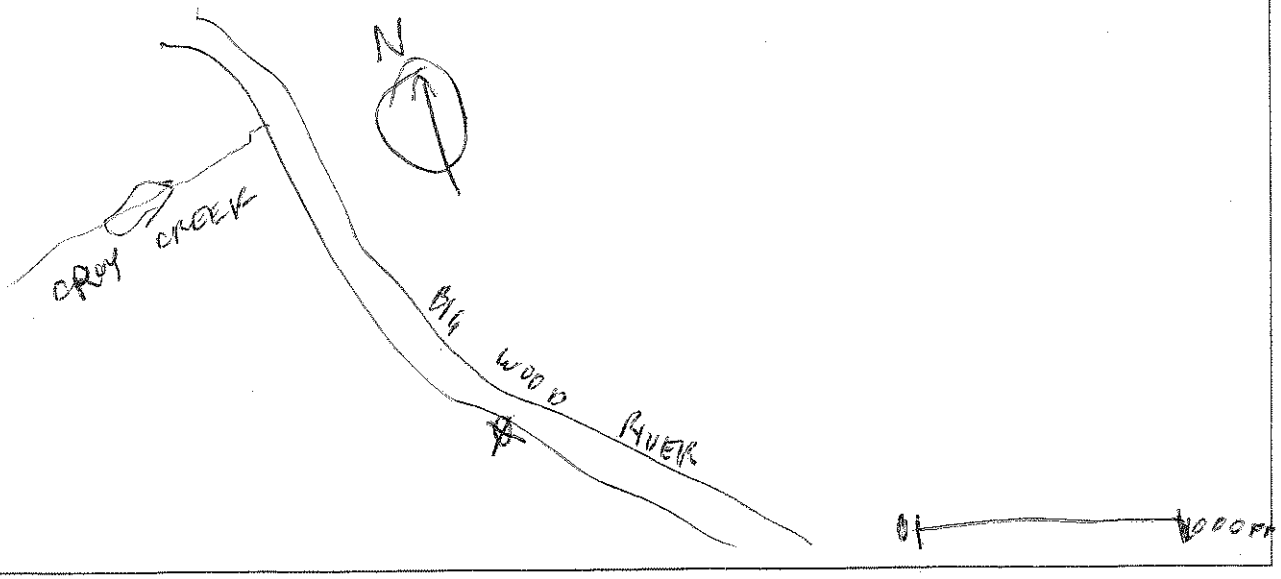
Sample Location:

Latitude: 43° 30' 44.228" N Longitude: 114° 19' 05.370" W

Photographs:

File No.	Time	Dir	Description
~~07~~ 22	1326	NW	SAMPLE
22 ~~0705~~	1326	N	RIVER SAMPLE LOCATION

Site Sketch:



Sample Team: BC & ZL ~~SOUTH RIVER~~ ZL

Date: 06.17.08 10:23

Logbook Number/ Page: /

BR04
collected by: Bryan Cocke

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	12.32
Temp (° C)	8.9°C	**Turb (NTU)**	19
pH:	8.78	**Salin (%)**	0.0
Cond (mS/cm)	.172	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dk Brn/Gry

Grain Size: Fine Sand to Silt, Poorly graded

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

Sample Location:

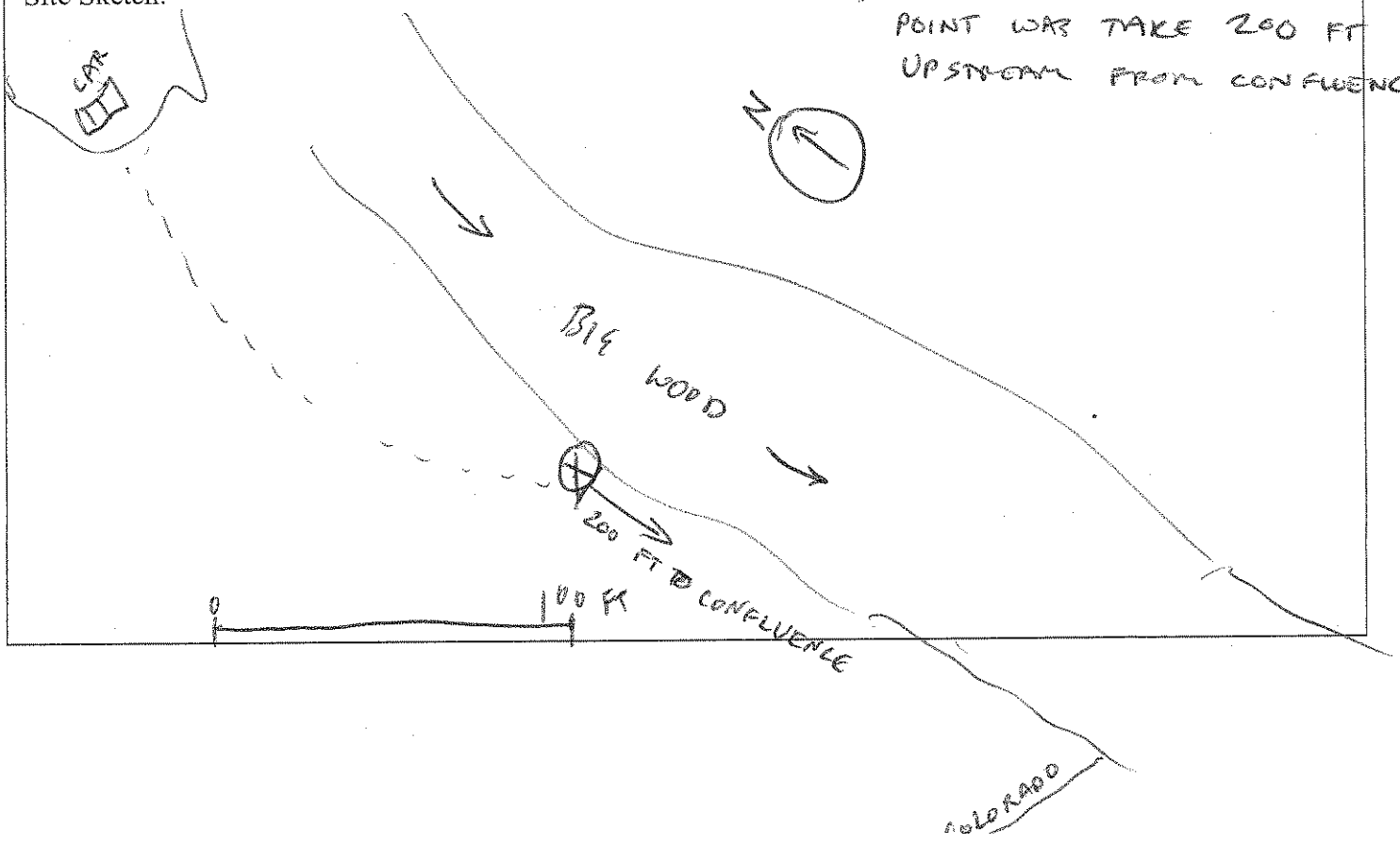
Latitude: SEE NOTE Longitude: SEE NOTE

Photographs:

File No.	Time	Dir	Description
14 ~~0697~~	1030	E	Sample BR04
15 ~~0698~~	1031	E	Sample Location at BR04

Site Sketch:

NOTE: NO GPS FIX AVAILABLE. POINT WAS TAKE 200 FT UPSTREAM FROM CONFLUENCE



Sample Team: BC & ZL ~~SOUTH RIVER~~ ZL Date: 06:17:08 9:30

Logbook Number/ Page: CG 01 /

☐ Wetland ☒ Stream Name: COLORADO GULCH

Water Quality Parameters"

Flow rate	STAGNANT cfs/gpm	**DO (mg/L)**	4.04
Temp (° C)	9.2	**Turb (NTU)**	4
pH:	8.67	**Salin (%)**	.01 %
Cond (mS/cm)	0.459 MS/cm	**Redox:**	

Sediment Sample Description" STAGNANT WATER

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Grain Size: SILTY W/ COARSE GRAVEL

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description: _____

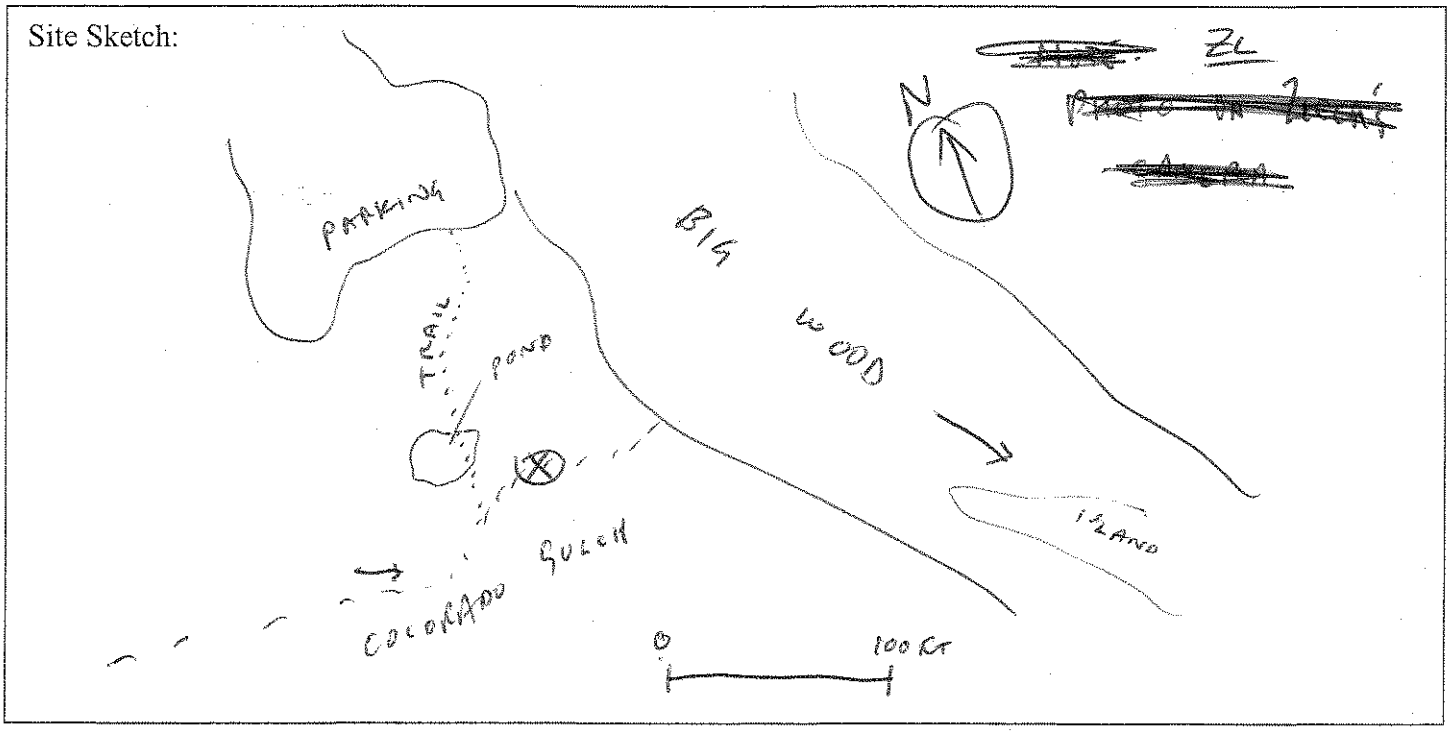
Sample Location:

Latitude: 43° 29' 50.153 N Longitude: 114° 18' 23.210 W

Photographs:

File No.	Time	Dir	Description
~~695~~ 12 24	9:37	SOUTH	SAMPLE PHOTO
~~696~~ 13 24	9:38	WEST	STREAM WITH EXPERT SAMPLER
~~02449~~			~~[illegible]~~
~~02449~~			~~[illegible]~~

Site Sketch:



Sample Team: BC + ZL ~~SOUTH TEAM~~ ZL Date: 06.17.08 9:50

Logbook Number/ Page: / BR03

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	11.81
Temp (° C)	8.9	**Turb (NTU)**	11
pH:	8.71	**Salin (%)**	0 %
Cond (mS/cm)	0.176	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: DARK GREY

Grain Size: POORLY GRADED FINE TO MEDIUM SAND

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

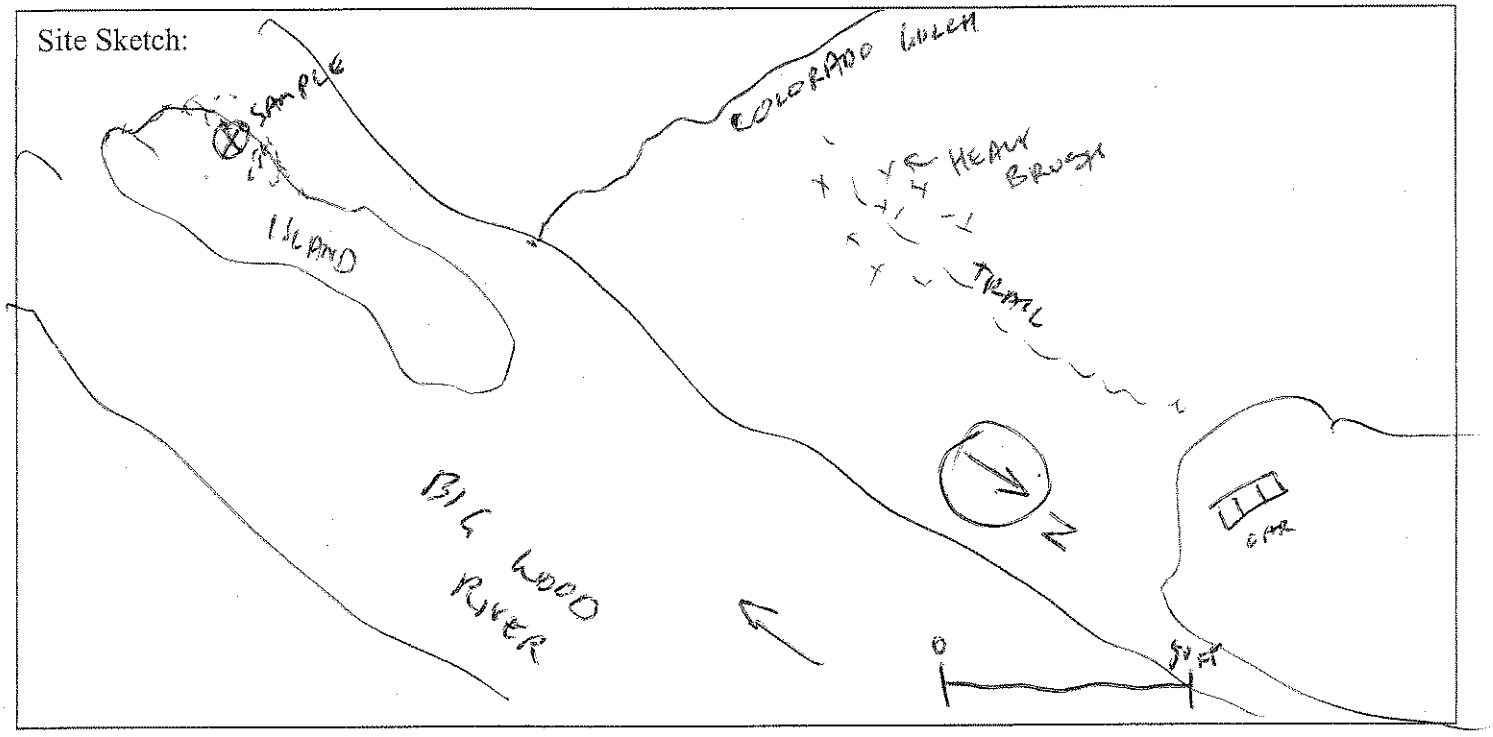
Sample Location:

Latitude: 43° 29' 50.139" N Longitude: 114° 18' 23.208" W

Photographs:

File No.	Time	Dir	Description
0248	10:04	NW	SAMPLE
0249	10:04	W	MOUTH OF COLORADO GULCH

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 0958

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Broadford Slough (Big Wood River) BR22

Water Quality Parameters"

Flow rate	10-100 cfs/gpm	**DO (mg/L)**	7.10
Temp (° C)	9.7	**Turb (NTU)**	bad reading but >100 NTU
pH:	7.82	**Salin (%)**	0
Cond (mS/cm)	0.191	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: brown

Grain Size: silt w/ fine sand

Organic Content: ☐ none ☑ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

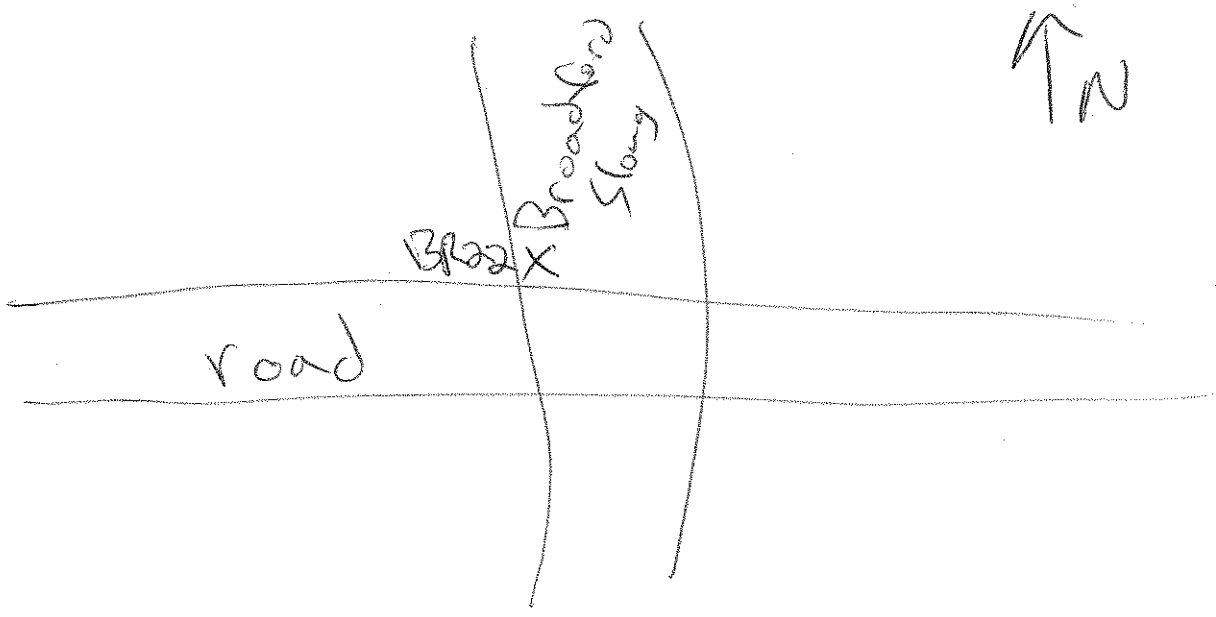
Sample Location:

Latitude: 43.489308 Longitude: -114.296432

Photographs:

File No.	Time	Dir	Description
1986	0958	N	Sample location BR22
1987	0958	Dwn	SW/SD Samples

Site Sketch:



Sample Team: JH & HM Sampler JH Date: 6/18/08 0940

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Star Gulch SG01 ✓

Water Quality Parameters"

Flow rate	N/A cfs/gpm	**DO (mg/L)**	N/A
Temp (° C)		**Turb (NTU)**	
pH:		**Salin (%)**	
Cond (mS/cm)		**Redox:**	

sediment sample only; Creekbed is Dry

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: dark brown

Grain Size: silt w/ some medium sand & a little clay

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

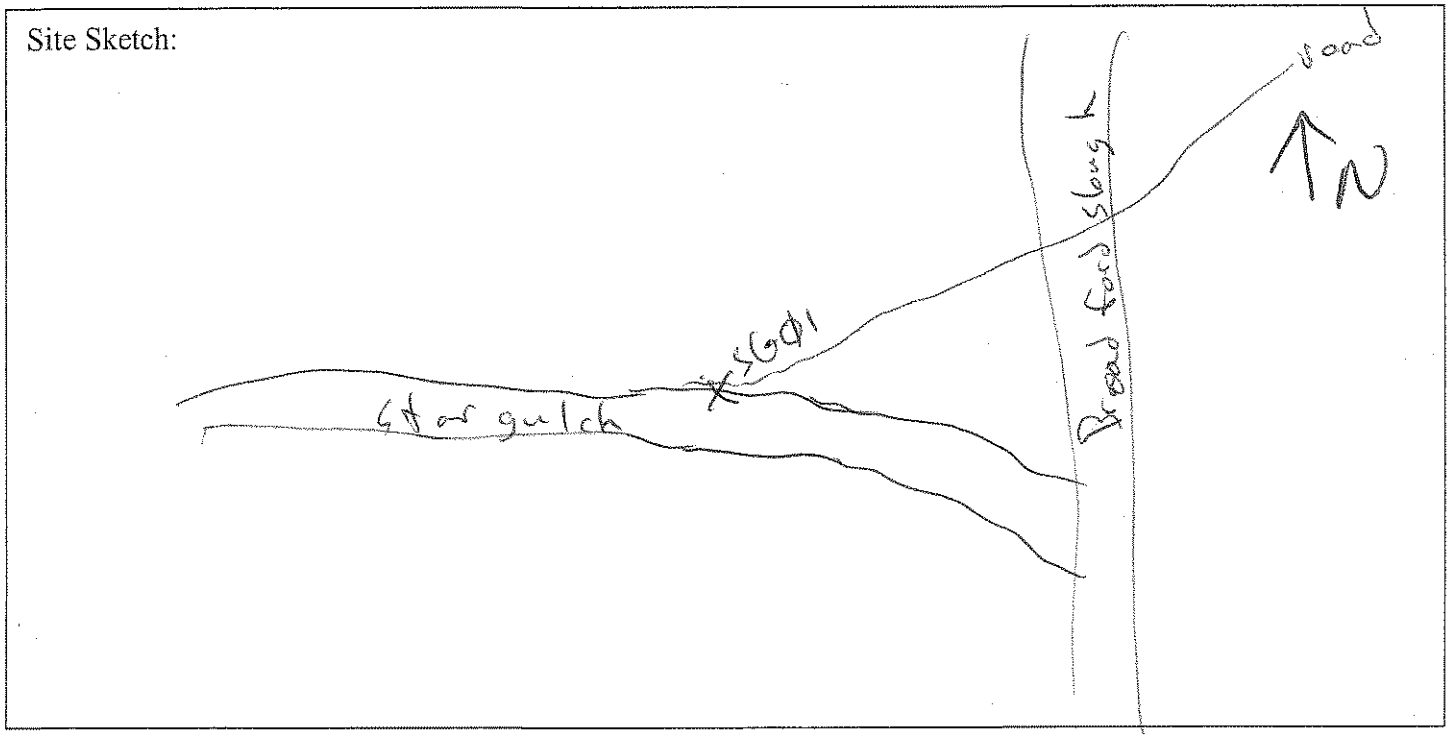
Sample Location:

Latitude: 43.486129 Longitude: -114.299493

Photographs:

File No.	Time	Dir	Description
1984	0940	E	Sample location SG01
1985	0940	Dwn	SD sample

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/17/08 1550

Logbook Number/ Page: _____ / _____

☐ Wetland ☐ Stream Name: Big Wood River (side channel) BR26

Water Quality Parameters"

Flow rate	107 (cfs/gpm)	**DO (mg/L)**	3.3
Temp (° C)	12.9	**Turb (NTU)**	61
pH:	7.72	**Salin (%)**	0.01
Cond (mS/cm)	0.317	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: dark brown

Grain Size: silt w/ coarse sand and small cobbles

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description: _____

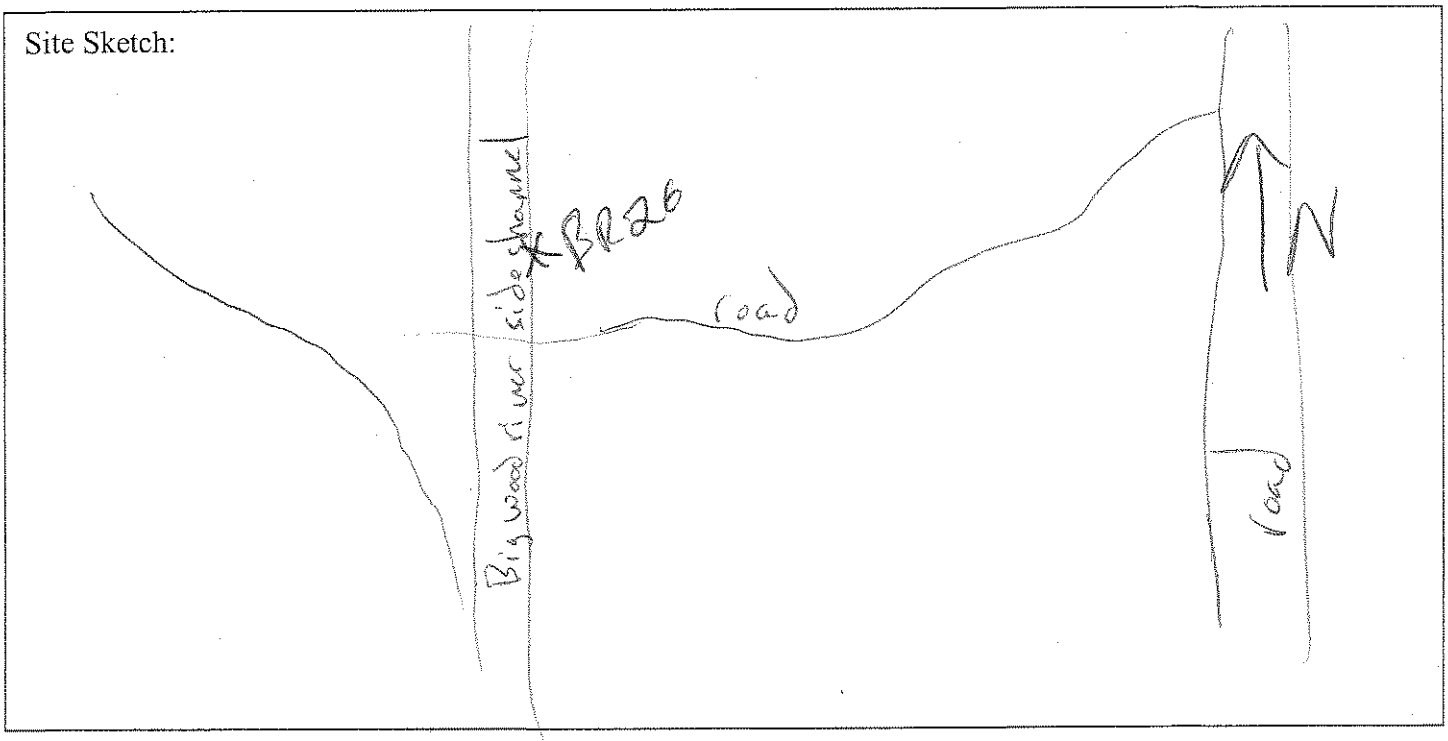
Sample Location:

Latitude: 43.478713 Longitude: -114.291565

Photographs:

File No.	Time	Dir	Description
1969	1550	W	Sample Location BR26
1970	1550	Down	SD/SW samples

Site Sketch:



Sample Team: JH & AM Sampler: JH Date: 6/17/08 1605

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Mammoth Gulch MG01

sediment sample only / dry creek bed

Water Quality Parameters"

Flow rate	NA **cfs/gpm**	**DO (mg/L)**	NA
Temp (° C)	NA	**Turb (NTU)**	
pH:		**Salin (%)**	
Cond (mS/cm)		**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dark brown

Grain Size: silt w/ medium to coarse sand

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☐ No Description:

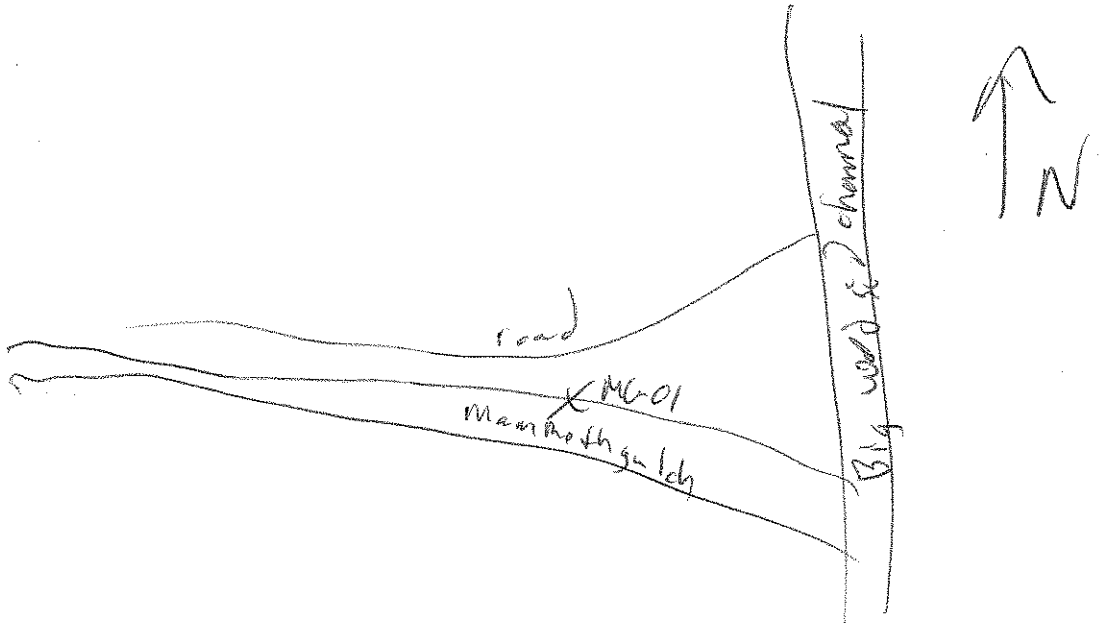
Sample Location:

Latitude: 43.4784408 Longitude: -114.290787

Photographs:

File No.	Time	Dir	Description
1971	1605	W	Sample location MG01
1972	1605	Dwn	" " "
1973	1605	Dwn	50/50 samples

Site Sketch:



Sample Team: JH+AM Sampler: AM Date: 6/17/08 1630

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Big Wood River Side Channel BR25

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	3.85
Temp (° C)	12.9	**Turb (NTU)**	bad reading
pH:	7.82	**Salin (%)**	0.01
Cond (mS/cm)	0.258	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: dark brown

Grain Size: silt

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description:

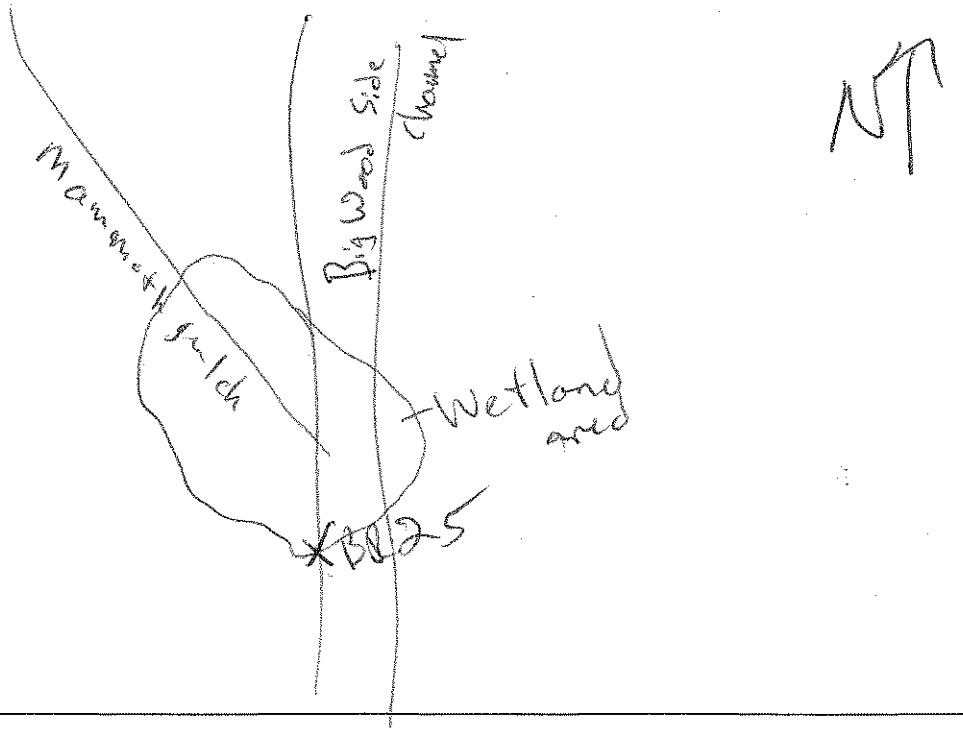
Sample Location:

Latitude: 43.477541 Longitude: -114.290976

Photographs:

File No.	Time	Dir	Description
1974	1630	E	Sample location BR25
1975	1630	Down	SD/SW samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 0820

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Broadford Slough (Big wood River) BR24

Water Quality Parameters"

Flow rate	10-100 cfs/gpm	**DO (mg/L)**	5.65
Temp (° C)	9.3	**Turb (NTU)**	
pH:	7.44	**Salin (%)**	0.00
Cond (mS/cm)	~~0.226~~ 0.221	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: DARK BROWN

Grain Size: silt with little fine sand

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy,

Odor? ☐ yes ☒ No Description: Creek depositional sediment

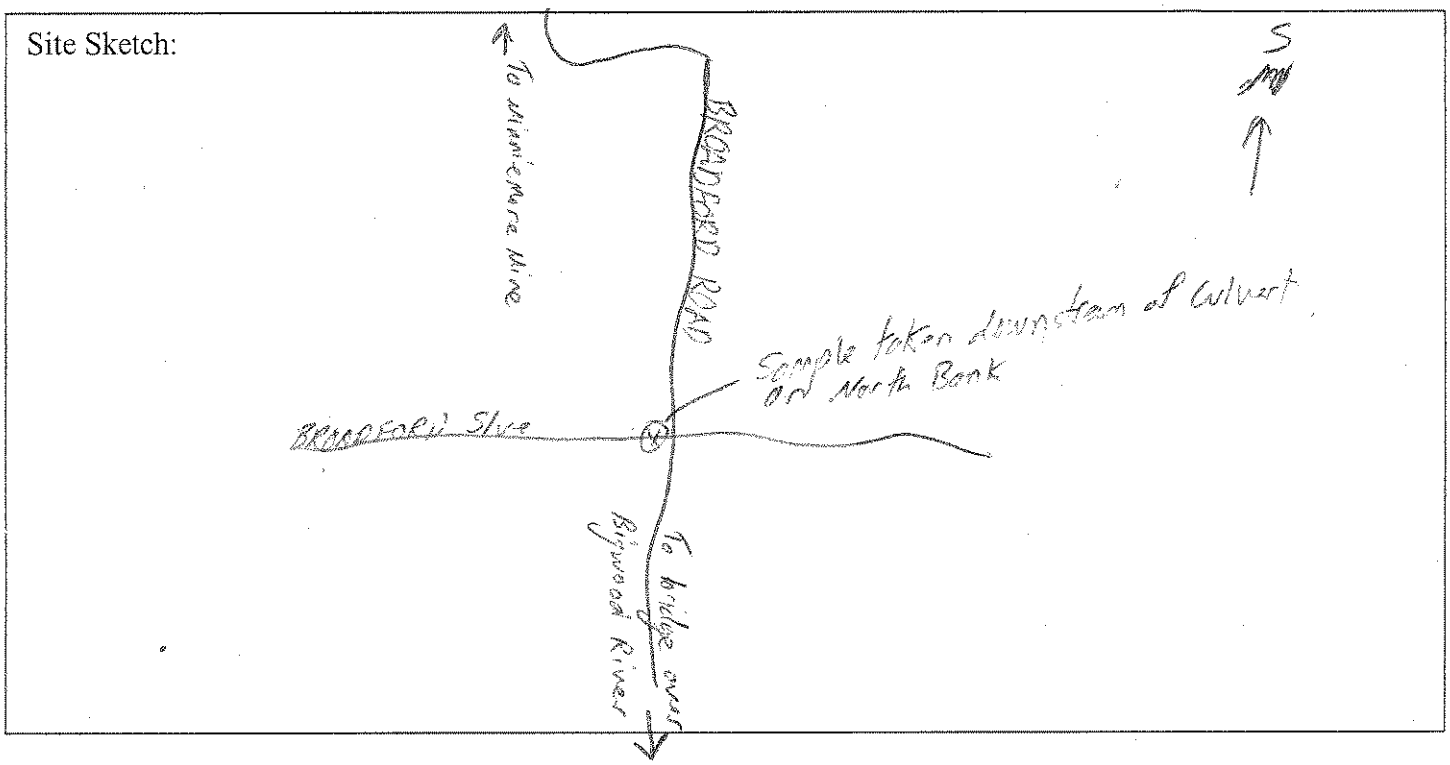
Sample Location:

Latitude: 43.474650 Longitude: -114.285725

Photographs:

File No.	Time	Dir	Description
1996	0820	E	Sample Location BR24
1997	0820	Dwn	SD/SW samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/13/08 0841

Logbook Number/ Page: _____/_____

☐ Wetland ☐ Stream Name: Minnie Moore Gulch NG-01

Water Quality Parameters"

Flow rate	NA	**cfs/gpm**	**DO (mg/L)**	NA
Temp (° C)	↓		**Turb (NTU)**	↓
pH:			**Salin (%)**	
Cond (mS/cm)	↓		**Redox:**	

*water sample not taken, dry creek/ditch bed.

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: dark brown

Grain Size: clay silt

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description: _____

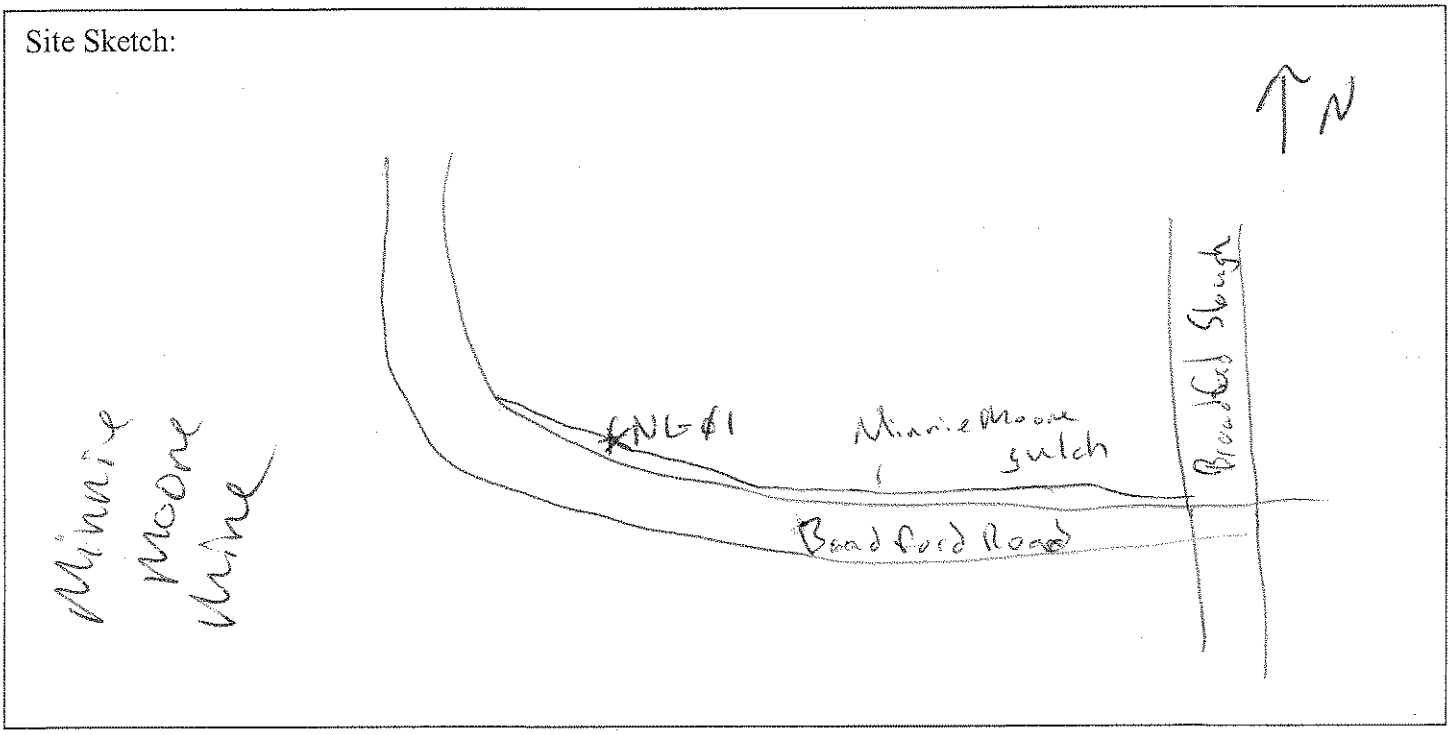
Sample Location:

Latitude: 43.466743 Longitude: -114.280995

Photographs:

File No.	Time	Dir	Description
1978	0841	W	Sample location NG-01
1979	0841	Dun	~~Sample location~~ SD samples
1980	0841	W	Sample location NG-01

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 0900

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Broadford Slough (Big Wood River) BR23

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	4.75
Temp (° C)	9.2	**Turb (NTU)**	bad reading
pH:	7.54	**Salin (%)**	0
Cond (mS/cm)	0.258	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: Dark Brown

Grain Size: silt w/ medium sand

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description:

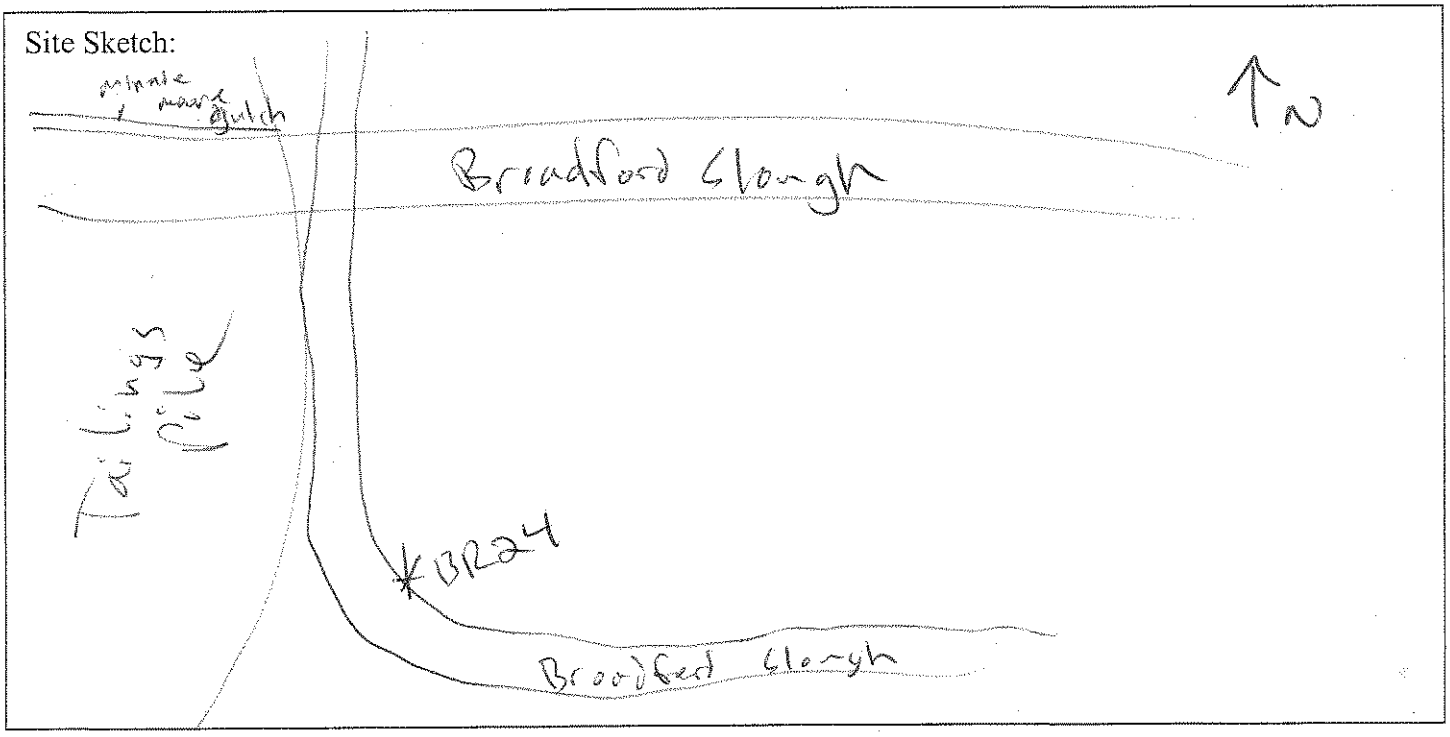
Sample Location:

Latitude: 43.468487 Longitude: -114.280234

Photographs:

File No.	Time	Dir	Description
1981	0900	W	Sample location BR23
1982	0900	Dwn	SD/SW Samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1105

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Broadford Slough BR21 (Big Wood River)

Water Quality Parameters"

Flow rate	10-100 ~~cfs~~/gpm	**DO (mg/L)**	6.42
Temp (° C)	10.1	**Turb (NTU)**	bad reading ~ 0 or 100
pH:	7.74	**Salin (%)**	
Cond (mS/cm)	0.318	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dark brown - black

Grain Size: silt w sand + small cobbles

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

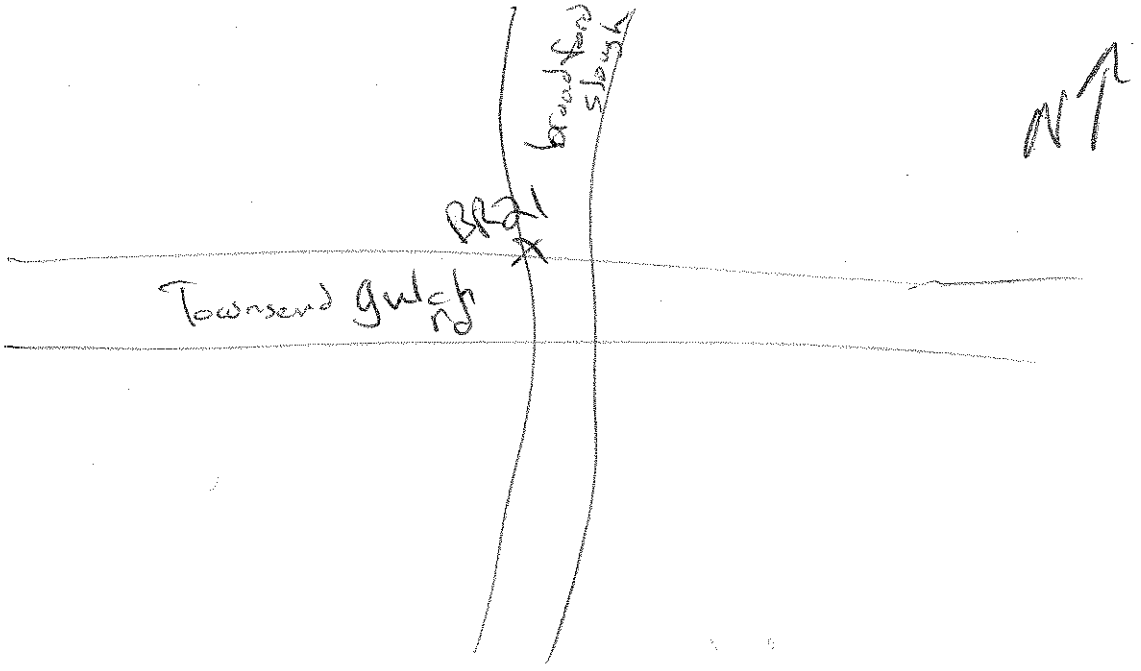
Odor? ☐ yes ☒ No Description:

Sample Location:
Latitude: 43.455359 Longitude: -114.268209

Photographs:

File No.	Time	Dir/m	Description
1990	1105	S NW	Sample Location BR21
1991	1105	Dwn	SD/SW Sample

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1045

Logbook Number/ Page: _____/_____

☐ Wetland ☐ Stream Name: Lee's Gulch LG01

Water Quality Parameters" beaver dam stopping flow

Flow rate	2.10 cfs/gpm	**DO (mg/L)**	3.45
Temp (° C)	10.2	**Turb (NTU)**	bad reading 0-100
pH:	7.71	**Salin (%)**	0.01
Cond (mS/cm)	0.354	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: brown

Grain Size: silt w/ some clay & coarse sand

Organic Content: ☐ none ☐ slight ☑ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

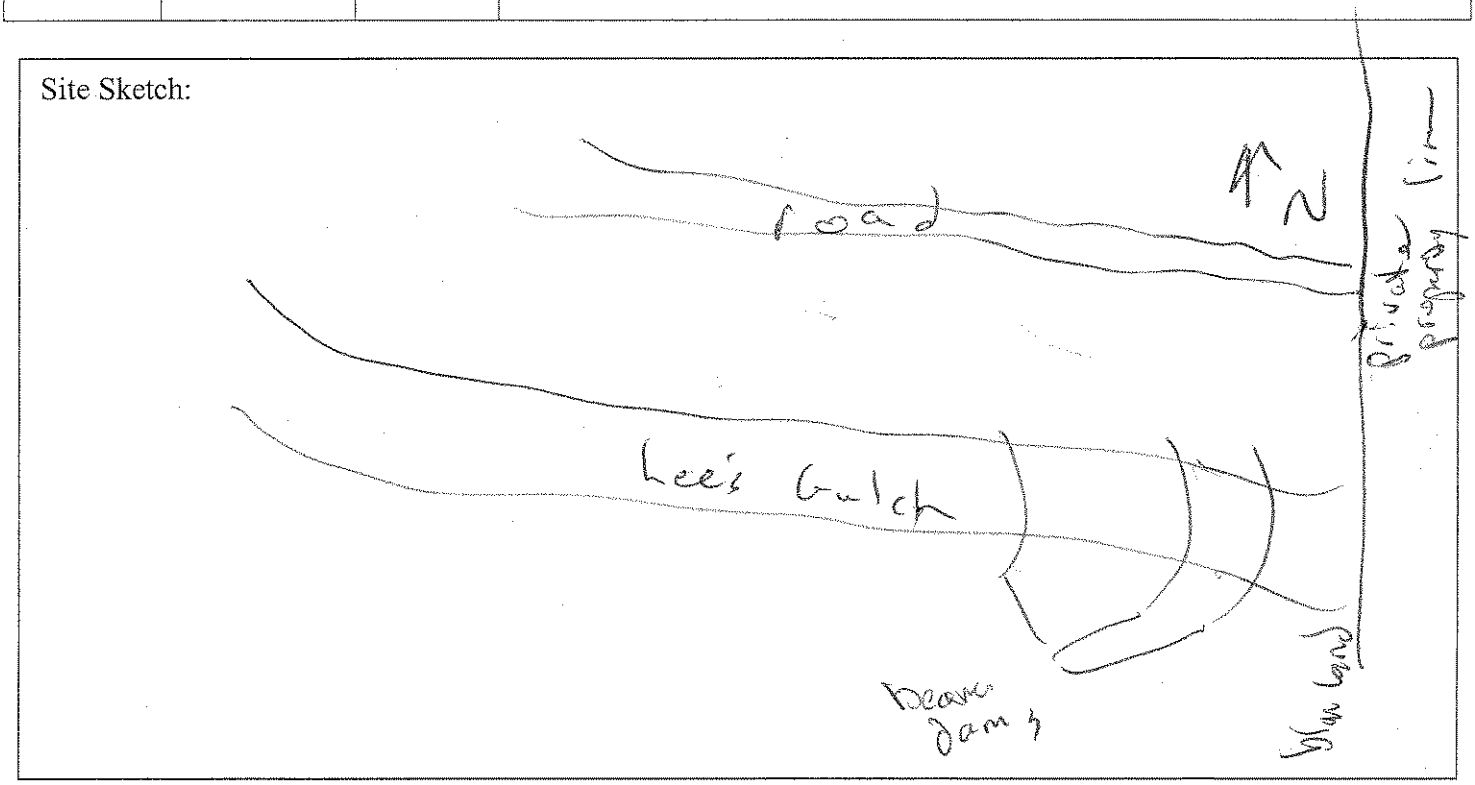
Sample Location:

Latitude: 43.453033 Longitude: -114.283264

Photographs:

File No.	Time	Dir	Description
1986	1045	S	Sample location LG01
1989	1045		SD/SW samples

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1120

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Broadford Slough BR20
Big Wood River

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	8.36
Temp (° C)	10.9	**Turb (NTU)**	bad reading >100
pH:	7.84	**Salin (%)**	0.01
Cond (mS/cm)	0.316	**Redox:**	

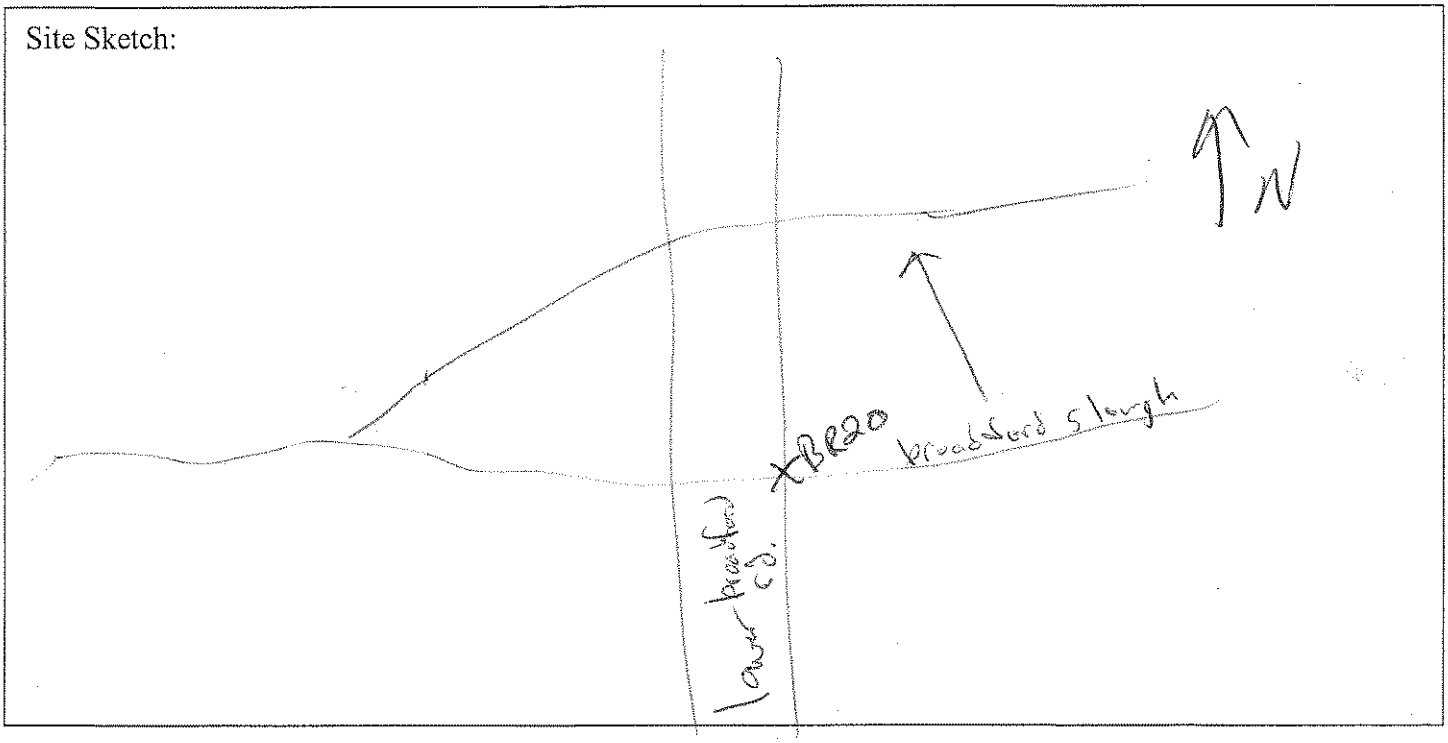
Sediment Sample Description"
Moisture: ☑ wet ☐ dry
Color: ~~Dark~~ AM Brown
Grain Size: Loose Sand w/ silt
Organic Content: ☐ none ☑ slight ☐ moderate ☐ heavy
Odor? ☐ yes ☑ ~~No~~ Description:

Sample Location:
Latitude: 43.454063 Longitude: -114.266203

Photographs:

File No.	Time	Dir	Description
1992	1120	SE	Sample location BR20
1993	1120	Dwn	SD/SW Sample

Site Sketch:



Sample Team: B. CIECKO & T.L. ~~SOUTH TEAM~~ ZL

Date: 06·16·08 12:40

Logbook Number/ Page: /

~~BR07~~ BR02 (BC)

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	100-1,000 cfs/gpm	**DO (mg/L)**	8.25
Temp (° C)	11.4	**Turb (NTU)**	291
pH:	8.33	**Salin (%)**	0%
Cond (mS/cm)	0.191 MS/CM	**Redox:**	

Sediment Sample Description" MEDIUM - POORLY GRADED SAND

Moisture: ☒ wet ☐ dry

Color: GREY / WATER WAS SLIGHTLY TURBID 18" VISABILITY.

Grain Size: FINE MEDIUM

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

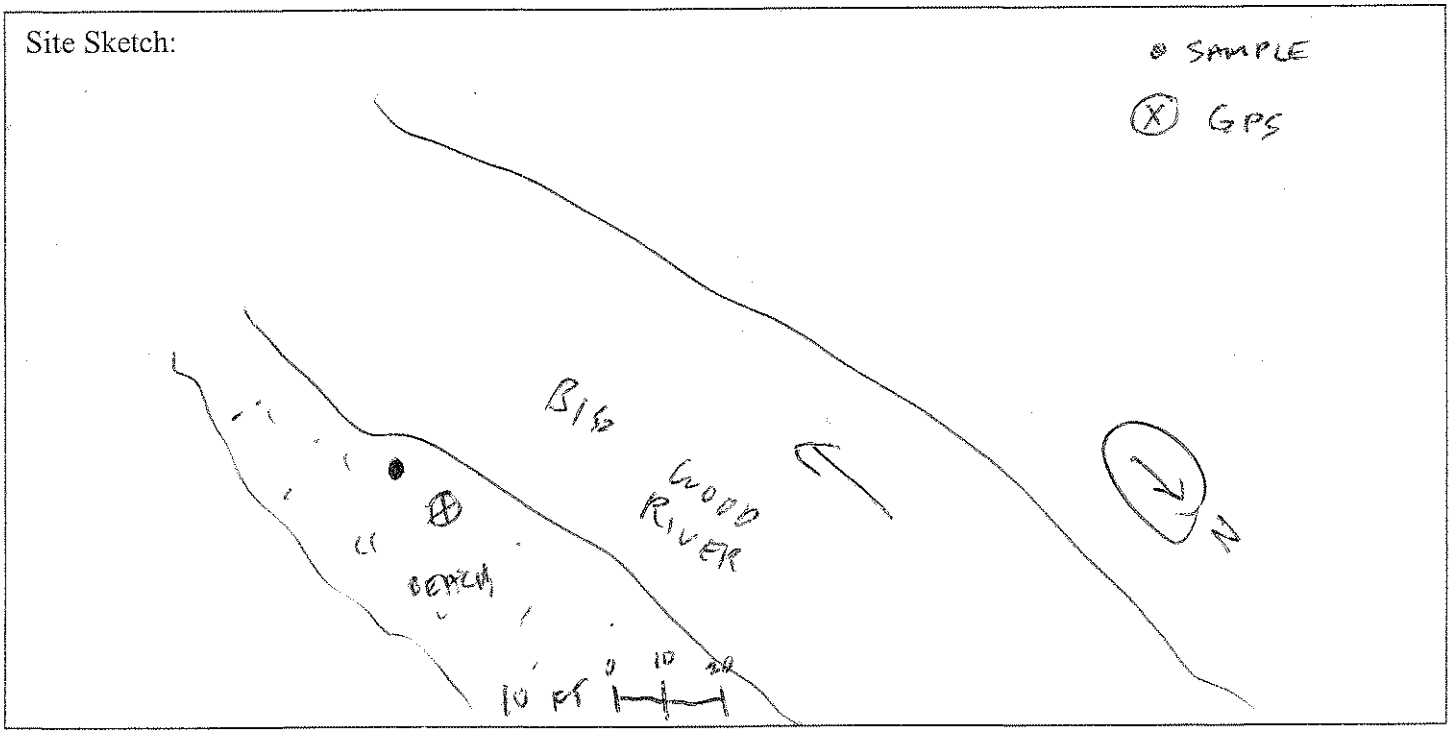
Sample Location:

Latitude: 43° 27' 28.161" N Longitude: 114° 15' 37.091" W

Photographs:

File No.	Time	Dir	Description
~~X 0039~~	12:00	SOUTH	FISHING REGULATIONS
~~X 0040~~	12:01	SOUTH	FISHING REGULATIONS
~~X 0041~~	12:40	WEST	SAMPLE LOCATION

Site Sketch:



* SEE NOTE ON REVERSE SIDE.

ample Team: B. CIECKO & Z. LEHN SOUTH FORK ZC Date: 06-16-08 15:40

Logbook Number/ Page: / BR01 ✓

☐ Wetland ☒ Stream Name: BIG WOOD RIVER

Water Quality Parameters"

Flow rate	800 cfs/gpm	**DO (mg/L)**	7.51
Temp (° C)	13.2	**Turb (NTU)**	451
pH:	8.53	**Salin (%)**	0 %
Cond (mS/cm)	0.204	**Redox:**	

Sediment Sample Description" MEDIUM - FINE SANDY POORLY GRADED

Moisture: ☒ wet ☐ dry

Color: GREY

Grain Size: MEDIUM TO FINE

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

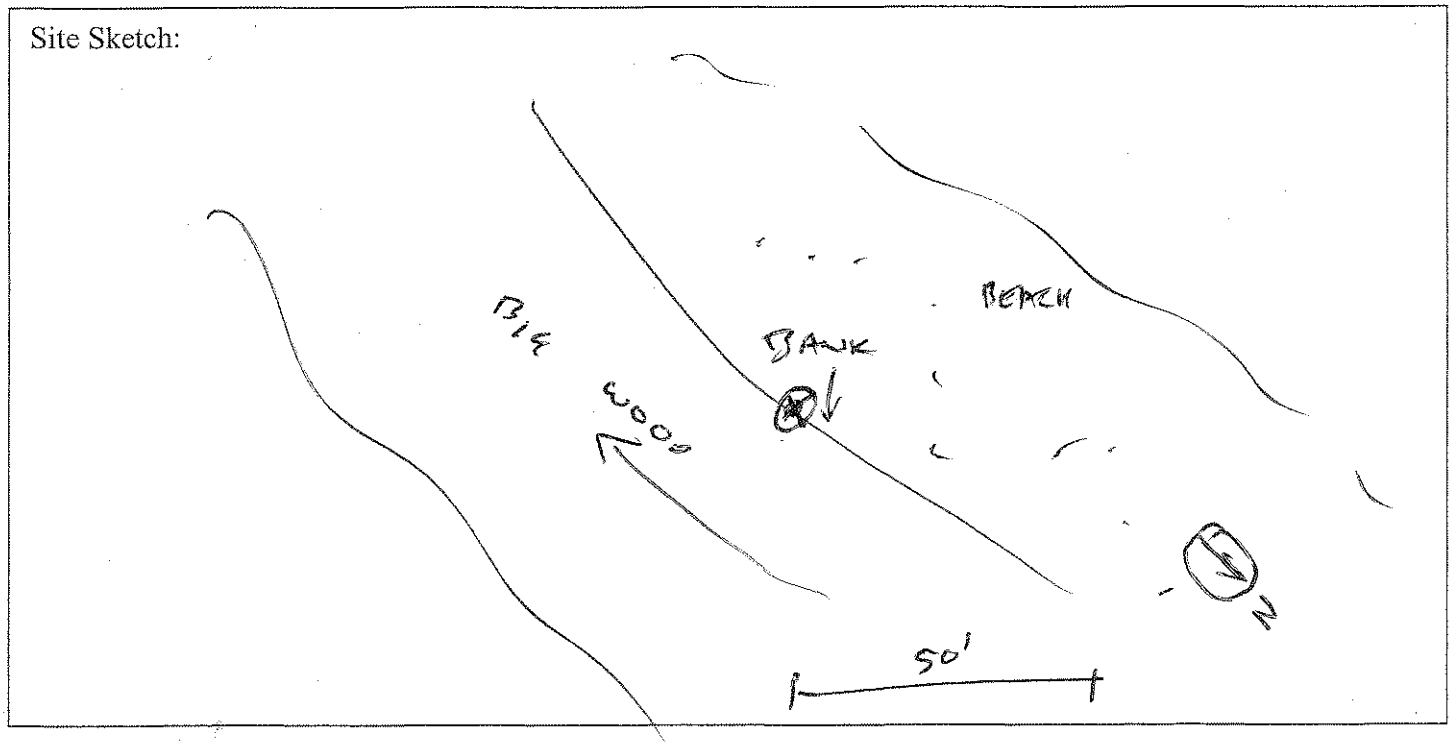
Sample Location:

Latitude: 43°26'28.345"N Longitude: 114°15'41.723"W

Photographs:

File No.	Time	Dir	Description
1004 24	15:45	EAST	SEDIMENT SAMPLE

Site Sketch:



Sample Team: BC + ZL ~~South Team~~ ZL

Date: 6.18.08

TG01

Logbook Number/ Page: /

☐ Wetland ☒ Stream Name: Townsend Gulch ✓

Water Quality Parameters"

Flow rate	< 10 FT³/sec cfs/gpm	**DO (mg/L)**	5.03
Temp (° C)	10.2	**Turb (NTU)**	9
pH:	7.57	**Salin (%)**	0.01
Cond (mS/cm)	0.392	**Redox:**	

Sediment Sample Description" WELL GRADED GRAVEL TO SILT.

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Water clear, no odor

Grain Size:

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

Sample Location:

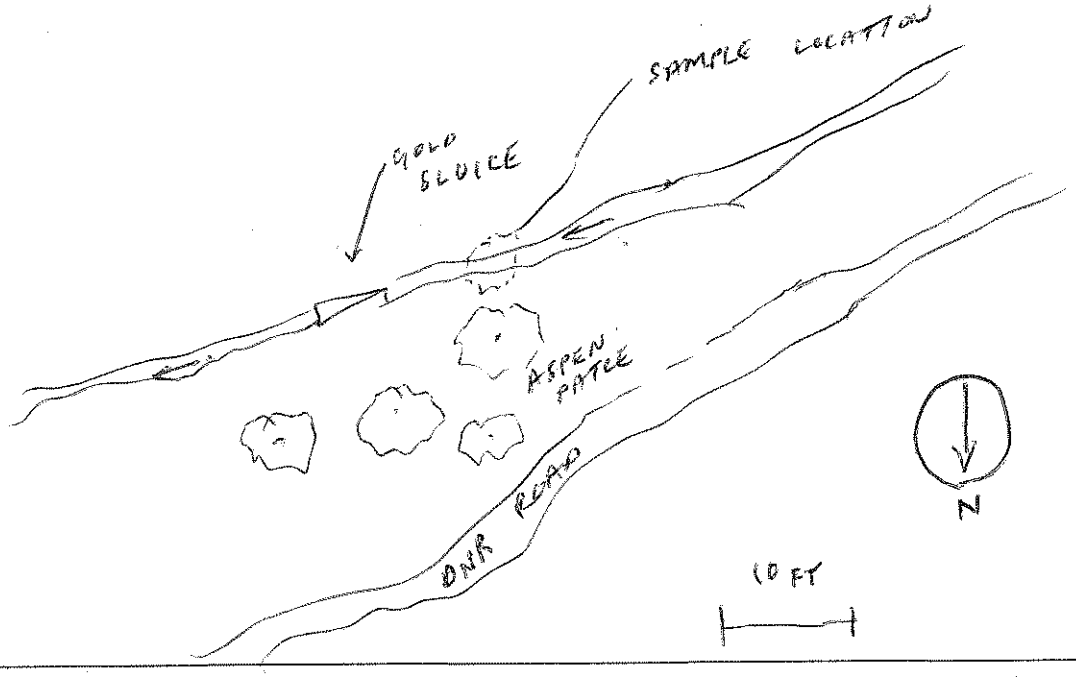
Latitude: 43° 26' 54.306" N Longitude: -114° 17' 11.307"

~ 25' NE of sample location.

Photographs:

File No.	Time	Dir	Description
1	11:18	NORTH	SAMPLE

Site Sketch:



Sample Team: JTH & AM Date: 6/14/05

Logbook Number/ Page: /

~~X~~ Wetland ~~X~~ Stream Name: Big Wood River BG02

Water Quality Parameters"

Flow rate	10-10 cfs/gpm	**DO (mg/L)**	8.19
Temp (° C)	~~7.74~~ AM 8.0	**Turb (NTU)**	10
pH:	7.79	**Salin (%)**	0
Cond (mS/cm)	0.147	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: chocolate

Grain Size: silt w/ some sand

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ ~~No~~ Description: _____

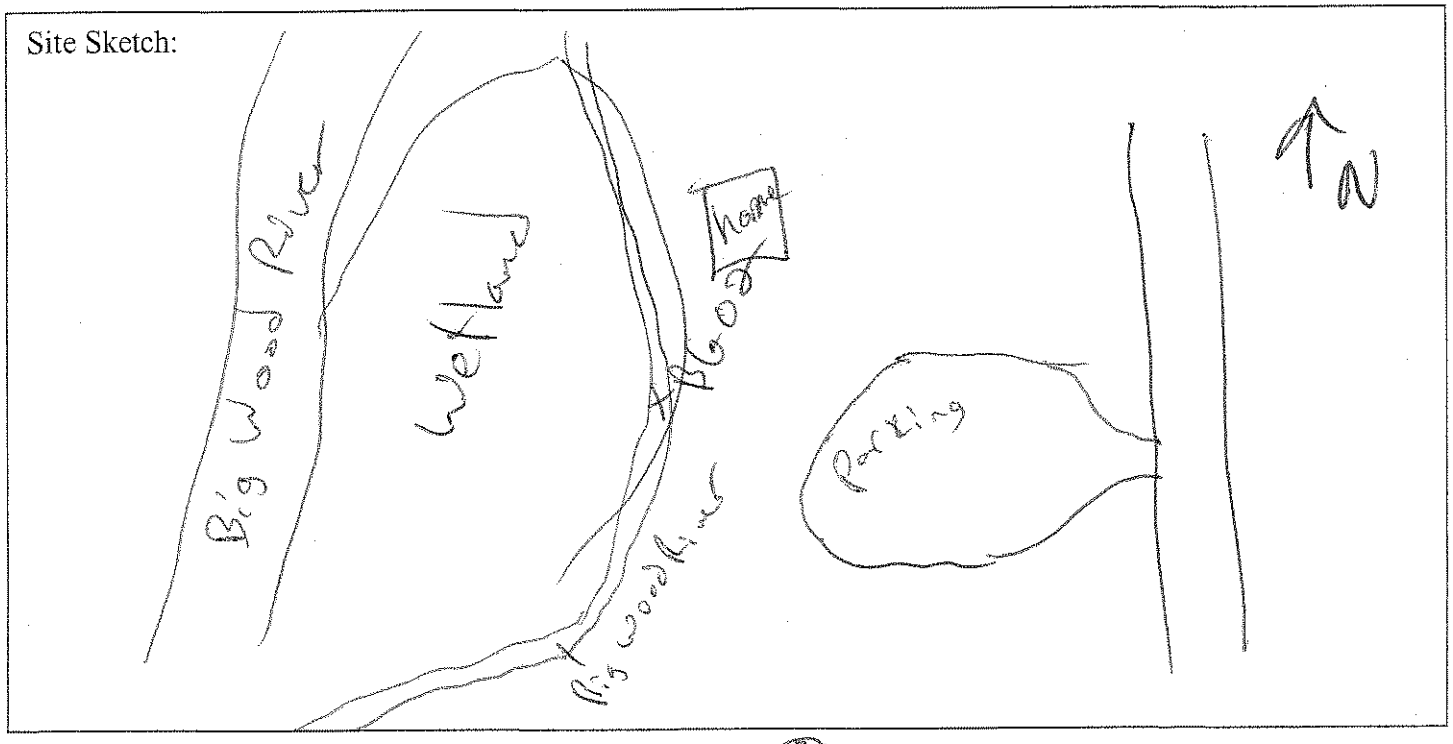
Sample Location:

Latitude: 43.089753 Longitude: -114.371259

Photographs:

File No.	Time	Dir	Description
101-1935	1135	W	Sample location BG-02
101-1936	1135	Dwn	SD + SW Sample

Site Sketch:



BG02SW - MJ96Y6 08254001

BG02SD - MJ9756 08254071

Sample Team: BC + ZL

Date: 06.18.08 9:32

WD01

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: WETLAND 02

Water Quality Parameters"

Flow rate	100 cfs/gpm	**DO (mg/L)**	10.98
Temp (° C)	9	**Turb (NTU)**	~10
pH:	8.84	**Salin (%)**	0
Cond (mS/cm)	0.169	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: BROWN (DARK)

Grain Size: SILT

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

Sample Location:

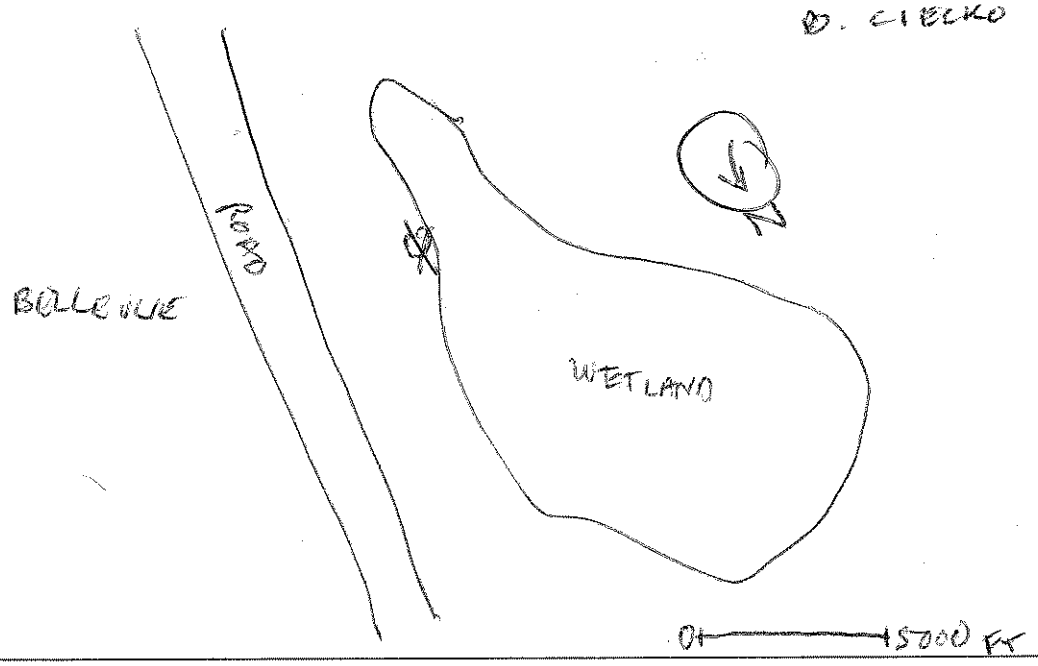
Latitude: 43.461700 60 Longitude: -114.25958840

Photographs:

File No.	Time	Dir	Description
~~7225~~ 3924	9:33	E	SAMPLE WD01
~~7225~~ 4024	9:34	W	SAMPLE LOCATION

Site Sketch:

SAMPLE TAKEN BY D. CIECKO



SW MJ9744 08254059

SD MJ97B4 08254129

Sample Team: BC + ZL Date: 06·18·08 10:25

WD #2

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: WETLAND 02

Water Quality Parameters"

Flow rate	**cfs/gpm**	**DO (mg/L)**	7.16
Temp (° C)	13.2	**Turb (NTU)**	~10
pH:	8.31	**Salin (%)**	0.01
Cond (mS/cm)	0.298	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Dark Brown

Grain Size: fine Sand to silt w/ some small Gravel

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

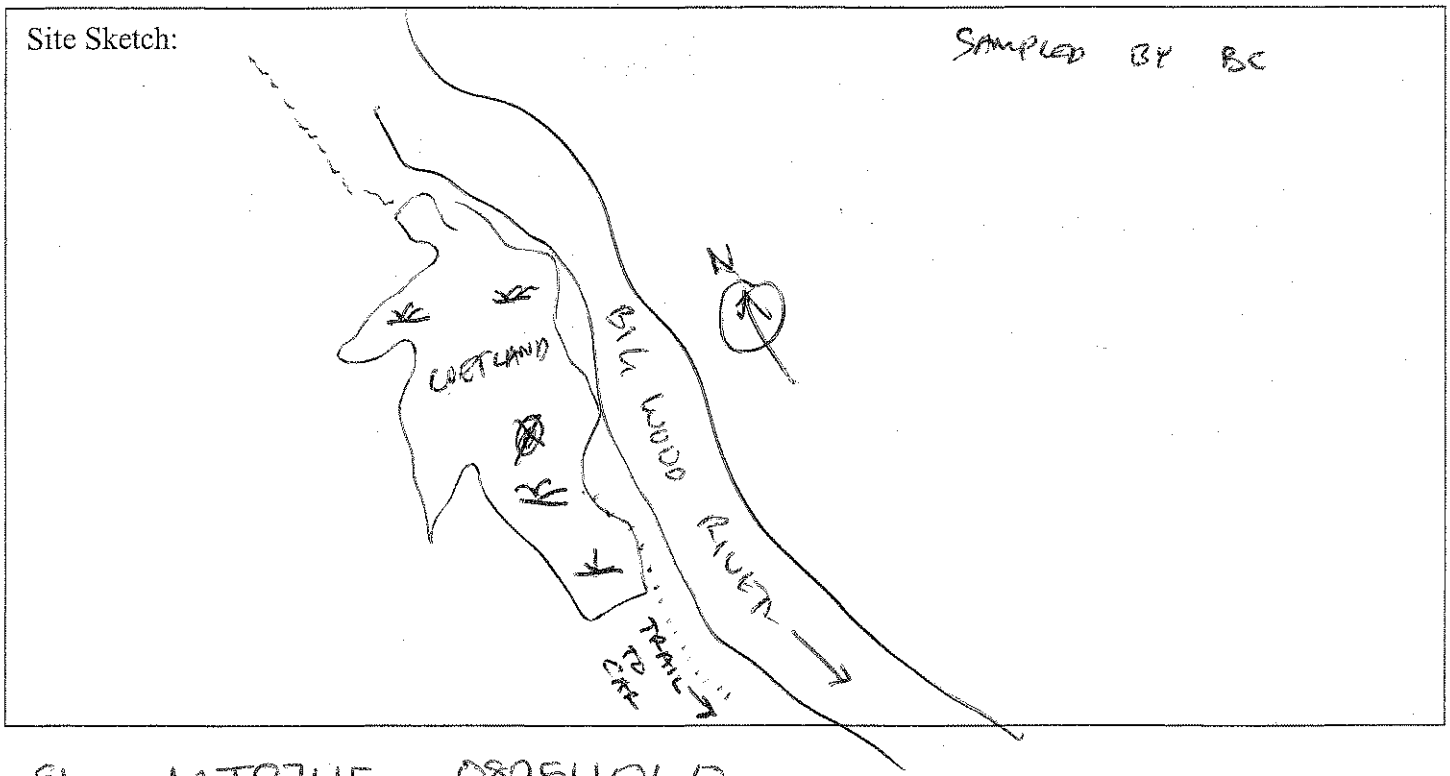
Sample Location: ZL

Latitude: ~~43.4616~~ 43.47447299° Longitude: -114.27948047°

Photographs:

File No.	Time	Dir	Description
24 41 ~~729~~	10:32	EAST	SAMPLE WD #2
42 ~~725~~	10:32	NORTH	SAMPLE LOCATION
44			

Site Sketch:



SW MJ9745 08254060

SD MJ97B5 08254130

Sample Team: BC & ZL

Date: 06.18.08 11:50

WD03

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: WETLAND 03

Water Quality Parameters"

Flow rate	0-10 cfs/gpm	**DO (mg/L)**	4.19
Temp (° C)	12.8	**Turb (NTU)**	~5
pH:	8.81	**Salin (%)**	0
Cond (mS/cm)	0.164	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Grain Size: SILT

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

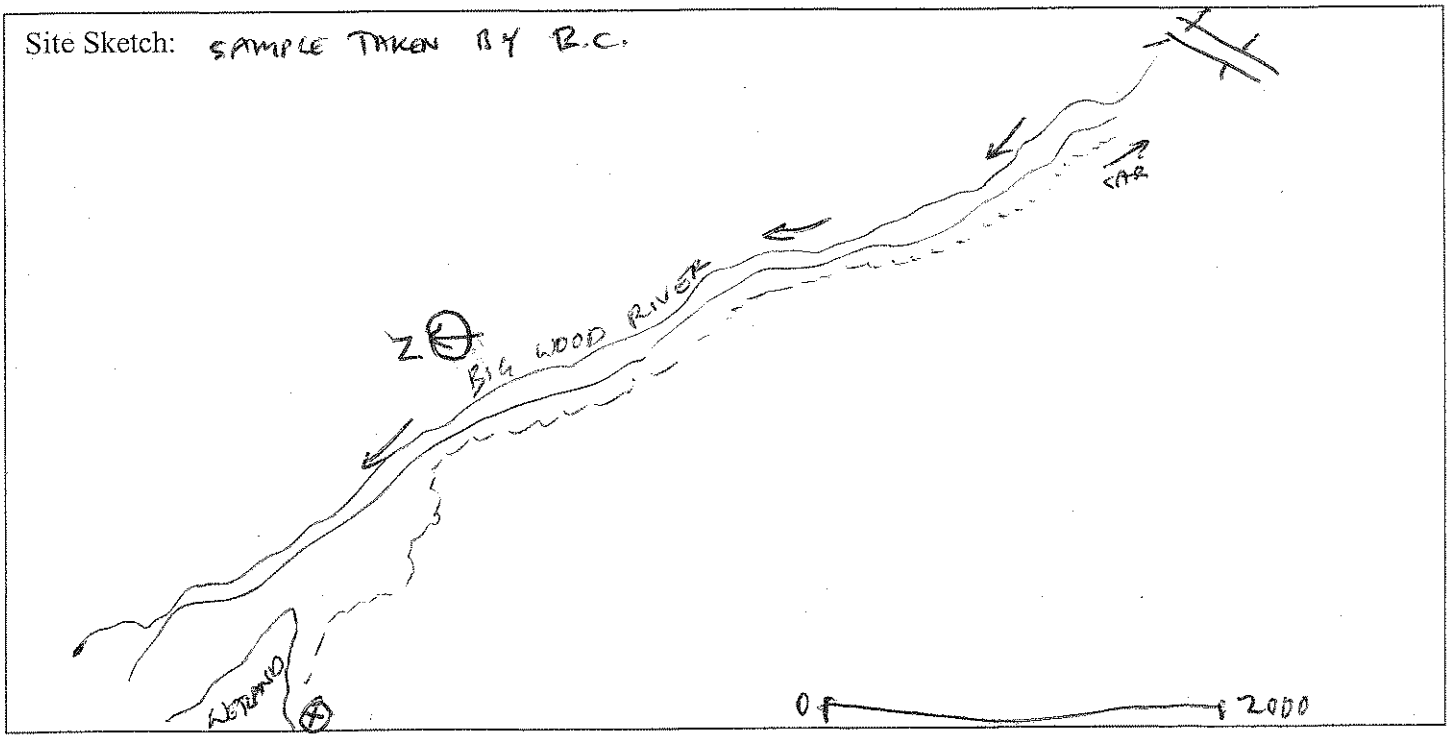
Sample Location:

Latitude: 43.488168647° Longitude: -114.286886810°

Photographs:

File No.	Time	Dir	Description
43 ~~725~~	11:59	N	SAMPLE WD03
44 ~~727~~	11:59	E	SAMPLE LOCATION

Site Sketch: SAMPLE TAKEN BY B.C.



WD038W - MJ9746 08254061

SD MJ9736 08254131

Sample Team: BC + ZL

Date: 06·18·08 14:20
WD 04

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: WETLAND 64

Water Quality Parameters"

Flow rate	30 cfs/gpm	**DO (mg/L)**	11.10
Temp (° C)	11.0	**Turb (NTU)**	7
pH:	9.13	**Salin (%)**	0
Cond (mS/cm)	0.164	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Grain Size: SILT

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

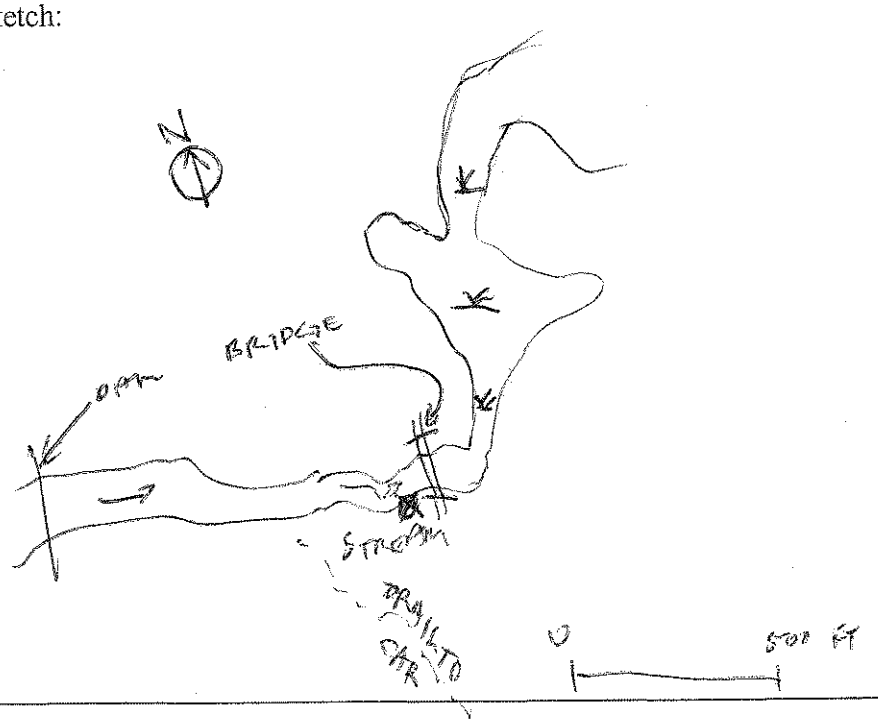
Sample Location:

Latitude: 43.503449 87 ° Longitude: -114.308245 00 °

Photographs:

File No.	Time	Dir	Description
452 ~~728~~	14:25	E	SAMPLE LOCATION
453 ~~729~~	14:35	N	SAMPLE WD 04

Site Sketch:



SW MJ9747 08254062

SD MJ97B7 08254132

Sample Team: BC + ZL

Date: 06.18.08 15:20

WD #5

Logbook Number/ Page: 1

☒ Wetland ☐ Stream Name: WETLAND #5

Water Quality Parameters"

Flow rate	100 cfs/gpm	**DO (mg/L)**	11.86
Temp (° C)	12.5	**Turb (NTU)**	~10
pH:	9	**Salin (%)**	0
Cond (mS/cm)	0.165	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Grain Size: SILT

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

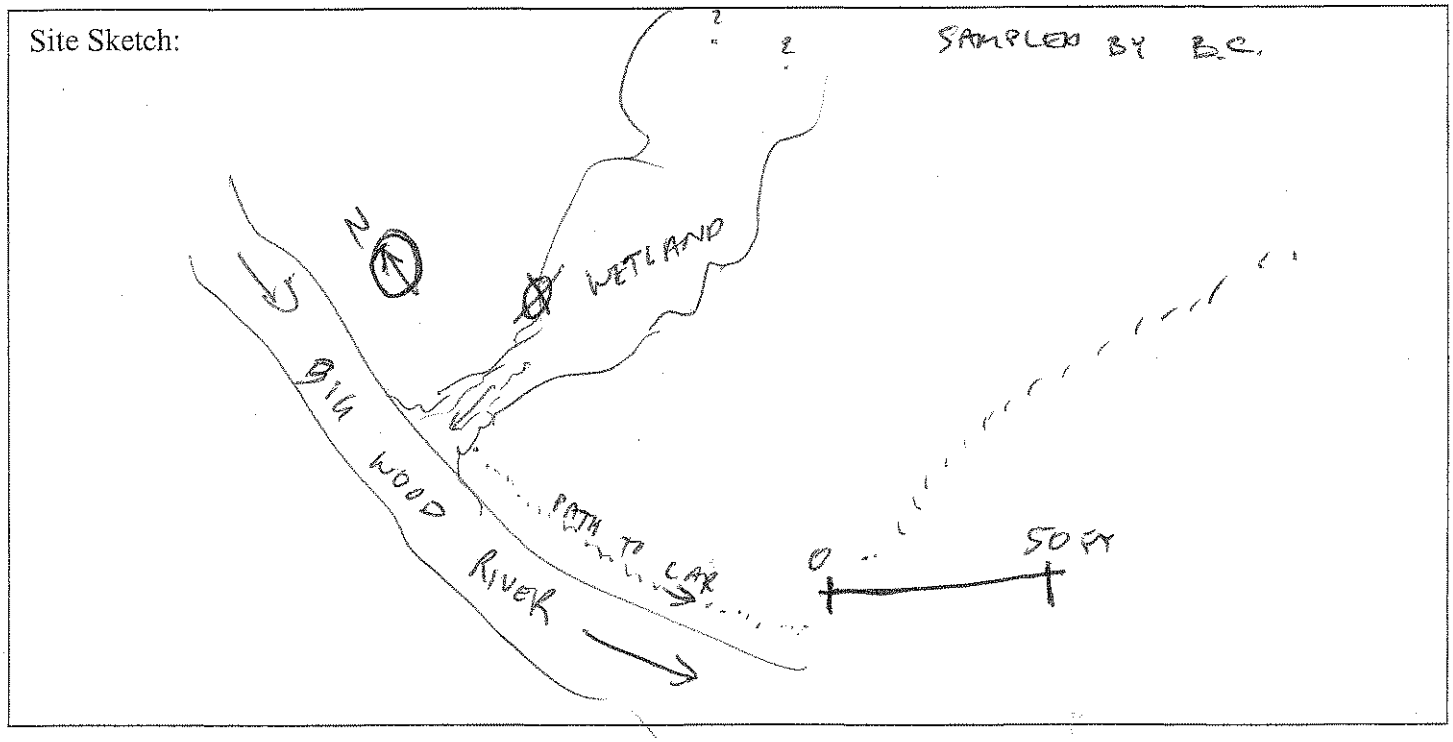
Sample Location:

Latitude: 43.53988872° Longitude: -114.33297286°

Photographs:

File No.	Time	Dir	Description
47 ~~730~~	1325	N	SAMPLE WD #5
48 ~~731~~	1325	S	SAMPLE LOCATION

Site Sketch:



SW MJ9748 08254063

SD MJ9788 08254133

Sample Team: BC & ZL Date: 06·18·08 16:42

WD06

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: WETLAND 06

Water Quality Parameters"

Flow rate	<10 cfs/gpm	**DO (mg/L)**	9.02
Temp (° C)	15.1	**Turb (NTU)**	10
pH:	8.48	**Salin (%)**	0
Cond (mS/cm)	0.337	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: DARK BROWN

Grain Size: SILT

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

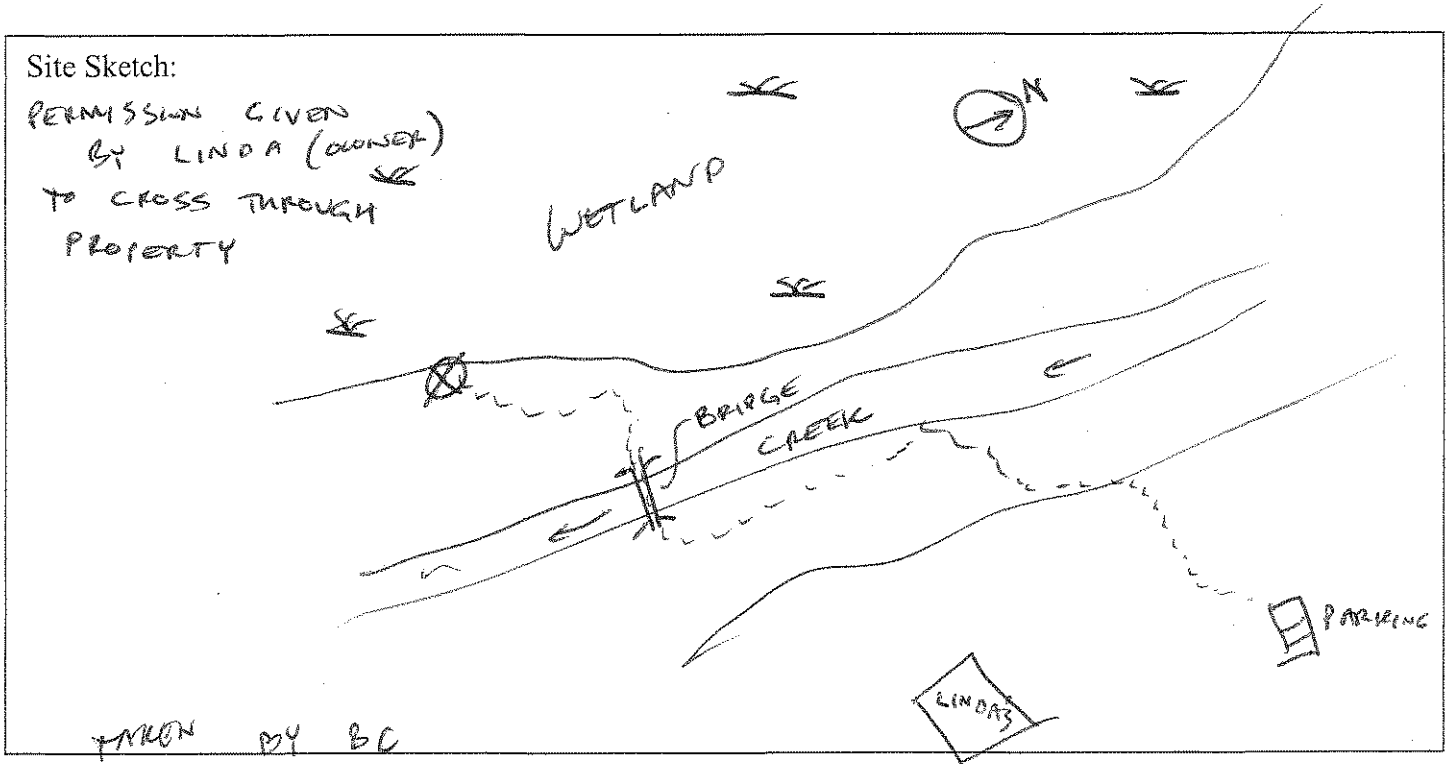
Sample Location:

Latitude: 43.57780616° Longitude: -114.33884206°

Photographs:

File No.	Time	Dir	Description
~~733~~ 734	16:50	S	SAMPLE WD06 LOCATION
~~734~~ 733	16:50	N	SAMPLE WD06

Site Sketch:



TAKEN BY BC

SW MJ9749 08254064

SD MJ9789 08254134

Sample Team: BC & NM Sampler: BC Date: 6/19/08 0857

Logbook Number/ Page: /

☑ Wetland ☐ Stream Name: Big Wood River WD07

Water Quality Parameters"

Flow rate	<10 cfs/gpm	**DO (mg/L)**	2.91
Temp (° C)	9.3	**Turb (NTU)**	bad reading ~<10
pH:	8.05	**Salin (%)**	0
Cond (mS/cm)	0.191	**Redox:**	

Sediment Sample Description"

Moisture: ☐ wet ☐ dry

Color: Gray Brown

Grain Size: fine sand to silt

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description:

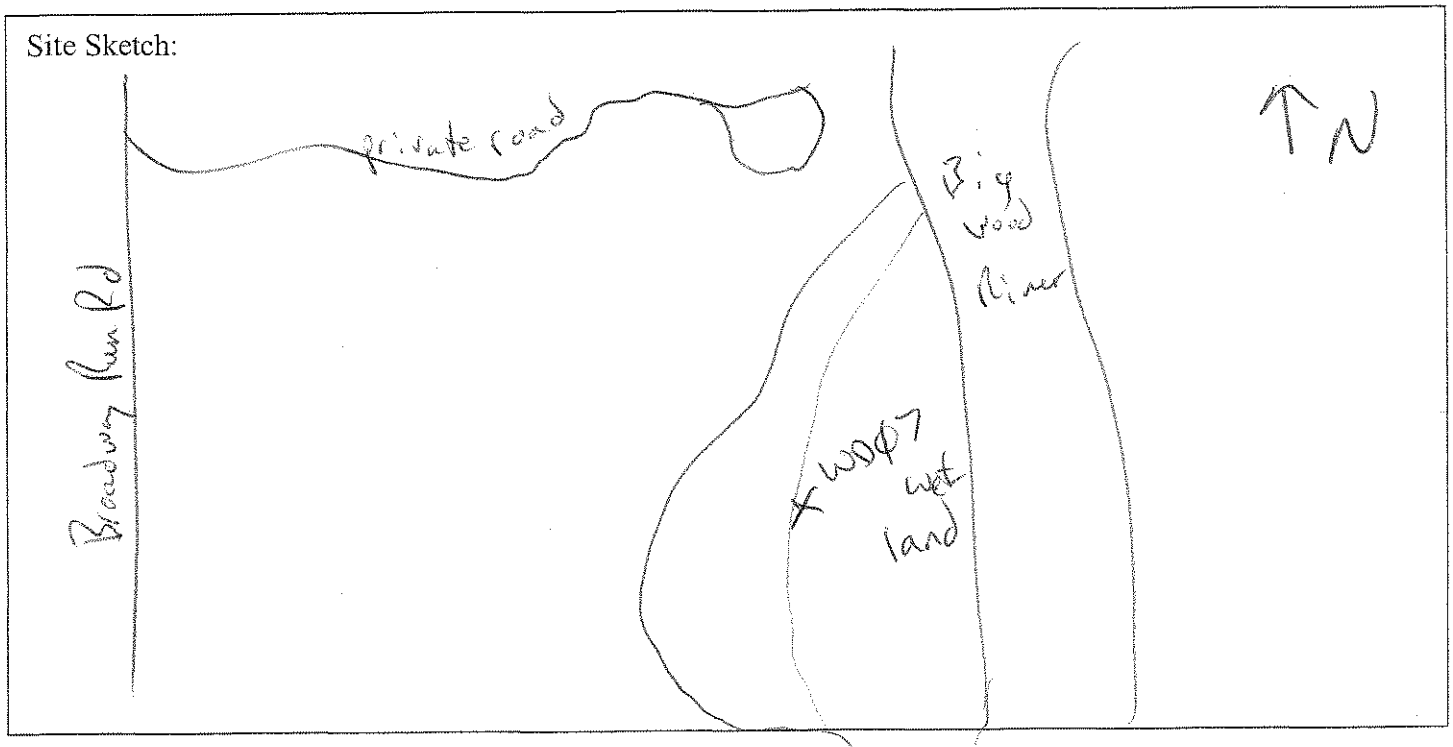
Sample Location:

Latitude: 43.63813 Longitude: -114.34456

Photographs:

File No.	Time	Dir	Description
2005	0857	W	Sample location WD07
2006	0857	Dwn	SW/SD samples

Site Sketch:



SW - MJ9750 08254065

SD MJ97C0 08254135

Sample Team: BC & AM Sampler: BC Date: 6/19/08 1006

Logbook Number/ Page: /

☑ Wetland ☐ Stream Name: Big Wood River WD08

Water Quality Parameters"

Flow rate	<10 cfs/gpm	**DO (mg/L)**	2.46
Temp (° C)	8.5	**Turb (NTU)**	46
pH:	8.22	**Salin (%)**	0.01
Cond (mS/cm)	0.270	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: Dark Brown

Grain Size: silty AM

Organic Content: ☐ none ☐ slight ☐ moderate ☑ heavy

Odor? ☐ yes ☑ No Description: _____

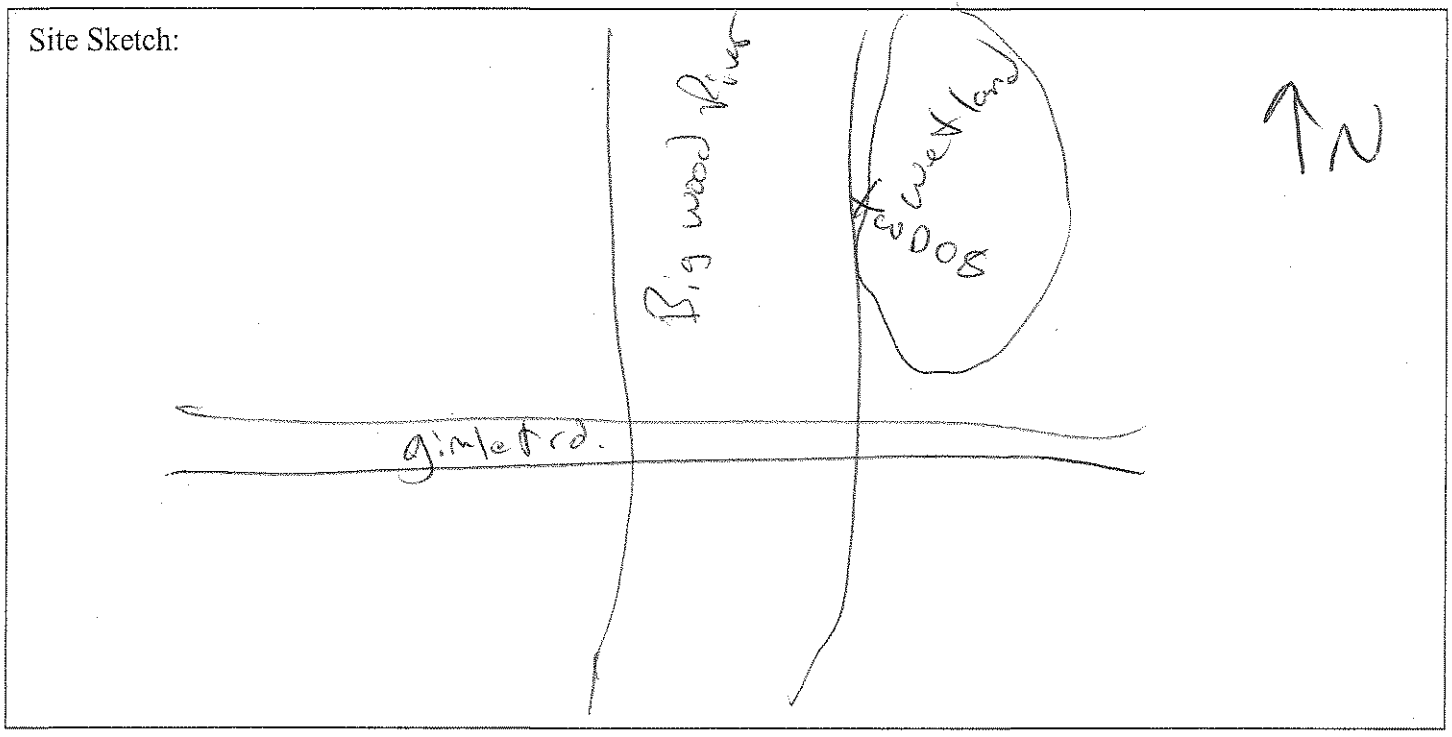
Sample Location:

Latitude: 43.629669 Longitude: -114.347570

Photographs:

File No.	Time	Dir	Description
2007	1006	E	Sample location WD08
2008	1006	Dwn	SD/SW samples

Site Sketch:



SW MJ9751 08254066

SD MJ97C1 08254136

Sample Team: BC + AM Sampler: BC Date: 6/19/08 1116

Logbook Number/ Page: _____/_____

☒ Wetland ☐ Stream Name: Big Wood River WD09

Water Quality Parameters"

Flow rate	1000+ cfs/gpm	**DO (mg/L)**	12.86
Temp (° C)	7.7	**Turb (NTU)**	bad reading ~120
pH:	9.2	**Salin (%)**	0
Cond (mS/cm)	0.136	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: Brown

Grain Size: medium sand to silt - moderately graded

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description: _____

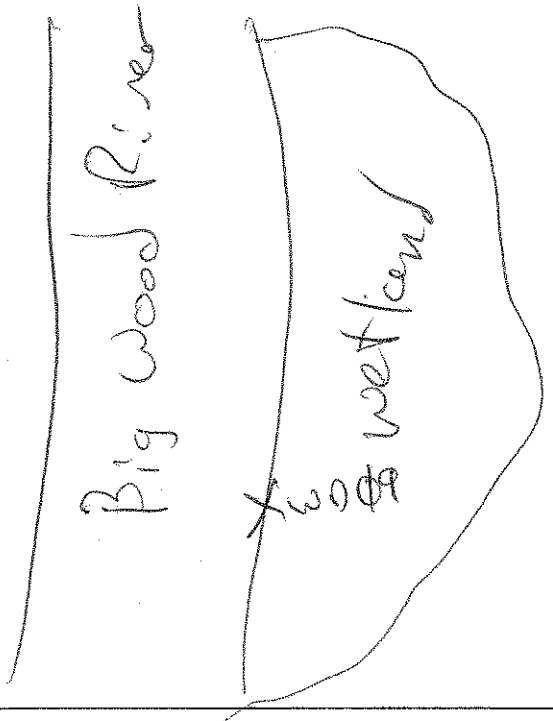
Sample Location:

Latitude: 43.672718 Longitude: -114.367487

Photographs:

File No.	Time	Dir	Description
2009	1116	W	Sample location WD09
2010	1116	Dwn	SD/SW samples

Site Sketch:



WD09SW - MJ9752 08254067

WD09SD - MJ97C2 08254137

Sample Team: BC & AM Sampler: BC Date: 6/19/08 1332

Logbook Number/ Page: /

☒ Wetland ☐ Stream Name: Big Wood River WD10

Water Quality Parameters"

Flow rate	< 10 cfs/gpm	**DO (mg/L)**	4.38
Temp (° C)	14.1	**Turb (NTU)**	37
pH:	8.01	**Salin (%)**	0.01
Cond (mS/cm)	0.314	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: poorly graded fine to medium grain sand SJ

Grain Size: brown/grey

Organic Content: ☐ none ☒ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

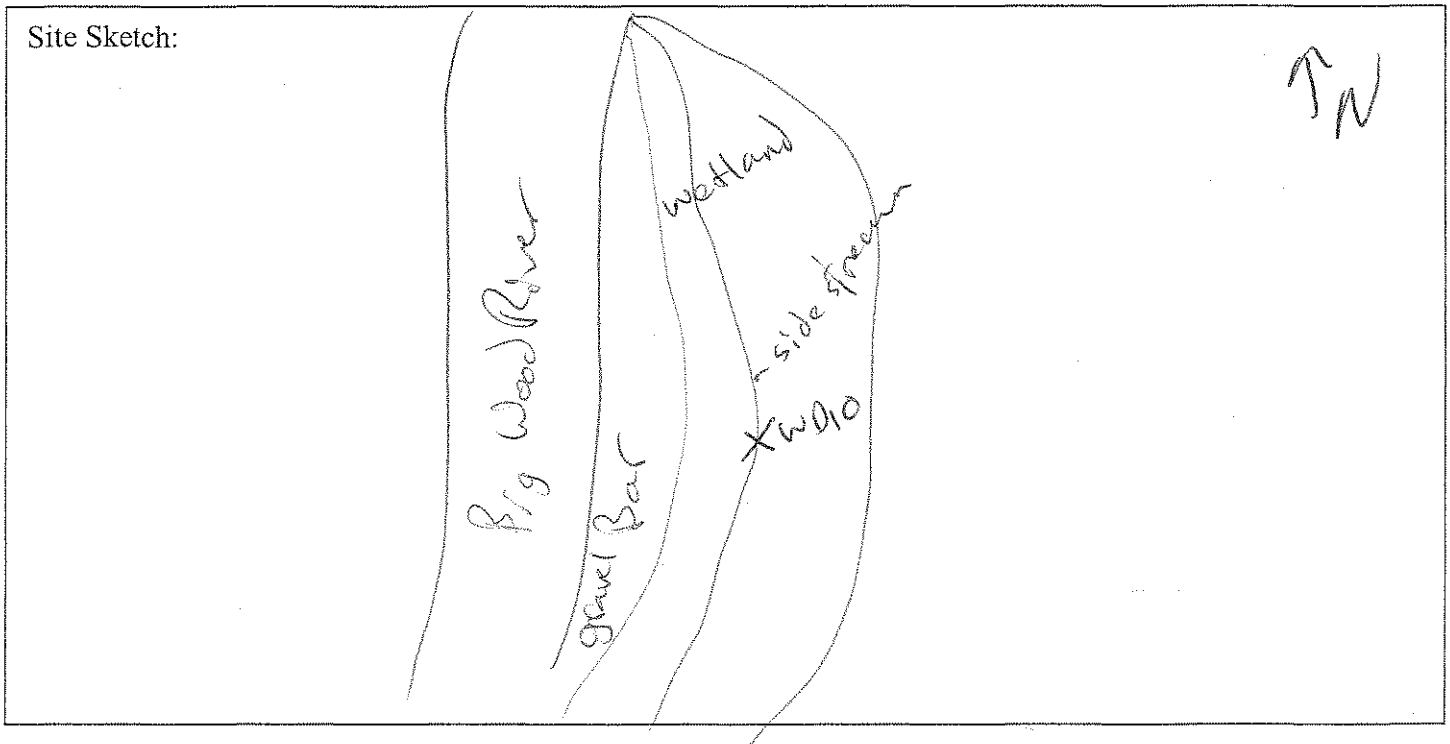
Sample Location:

Latitude: 43.430620 Longitude: -114.260532

Photographs:

File No.	Time	Dir	Description
2011	1332	E	Sample Location WD10
2012	1332	Down	SD/SW Sample

Site Sketch:



SW - MJ9753 08254068

SD MJ97C3 08254138

Sample Team: JTH, PAM Date: 6/16/08

Logbook Number/ Page: 1

☒ Wetland ☒ Stream Name: Parker gulch BG04

Water Quality Parameters"

Flow rate	0-10 (cfs)/gpm	**DO (mg/L)**	2.14
Temp (° C)	7.8	**Turb (NTU)**	10
pH:	7.81	**Salin (%)**	0.03
Cond (mS/cm)	.750	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: chocolate

Grain Size: fine

Organic Content: ☐ none ☐ slight ☐ moderate ☒ heavy

Odor? ☐ yes ☒ No Description:

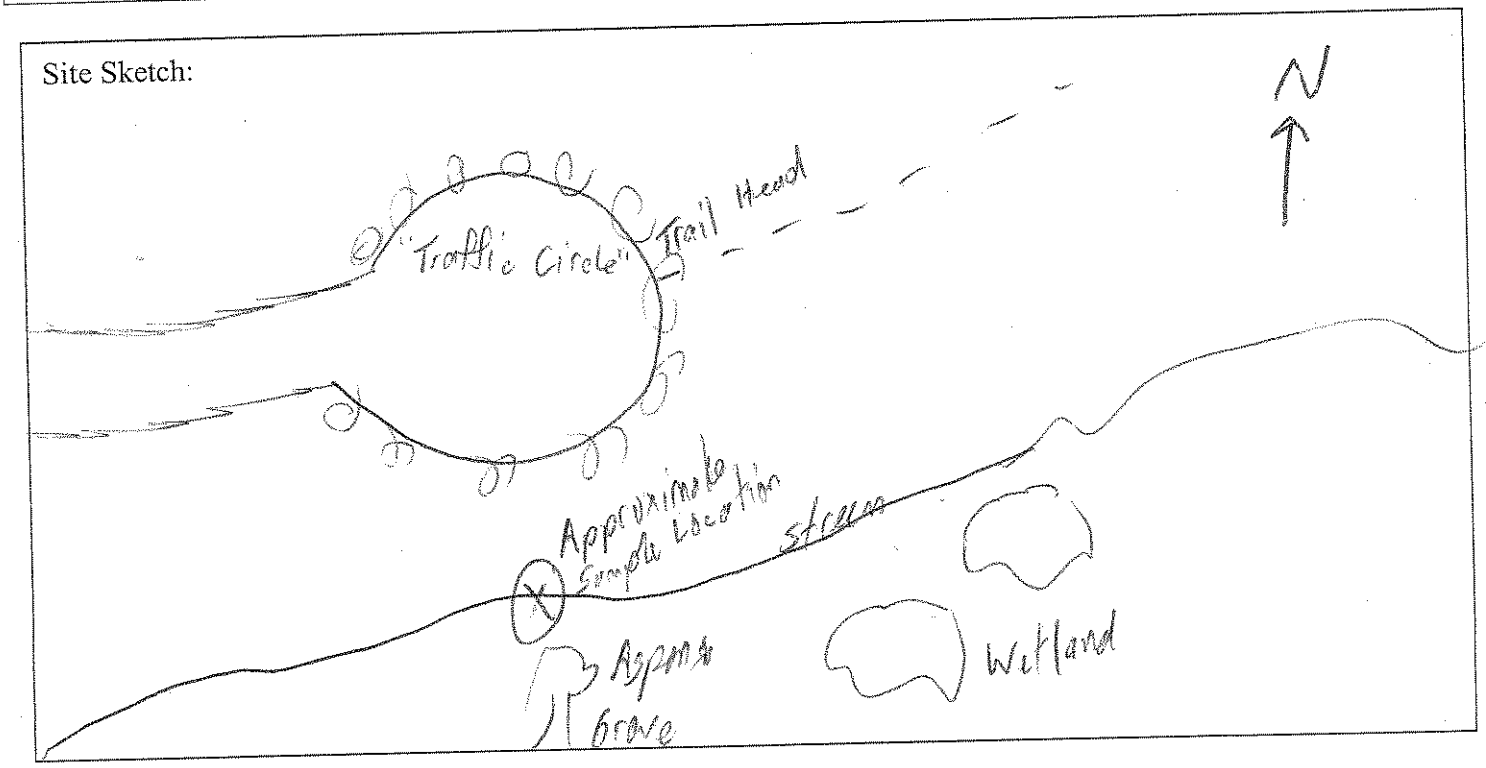
Sample Location:

Latitude: 43° 42' 00.610 N Longitude: 114° 16' 56.435 W

Photographs:

File No.	Time	Dir	Description
1	0940	W	stream / sample location BG04
2	0940	down	Sample / SW

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1352

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Parker Gulch (PG01)

Water Quality Parameters"

Flow rate	NA	**cfs/gpm**	**DO (mg/L)**	NA
Temp (° C)			**Turb (NTU)**	
pH:			**Salin (%)**	
Cond (mS/cm)			**Redox:**	

parker gulch is dry sediment sample only

Sediment Sample Description"

Moisture: ☐ wet ☒ dry

Color: light brown

Grain Size: coarse sand w/ cobbles and some silt

Organic Content: ☒ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☒ No Description:

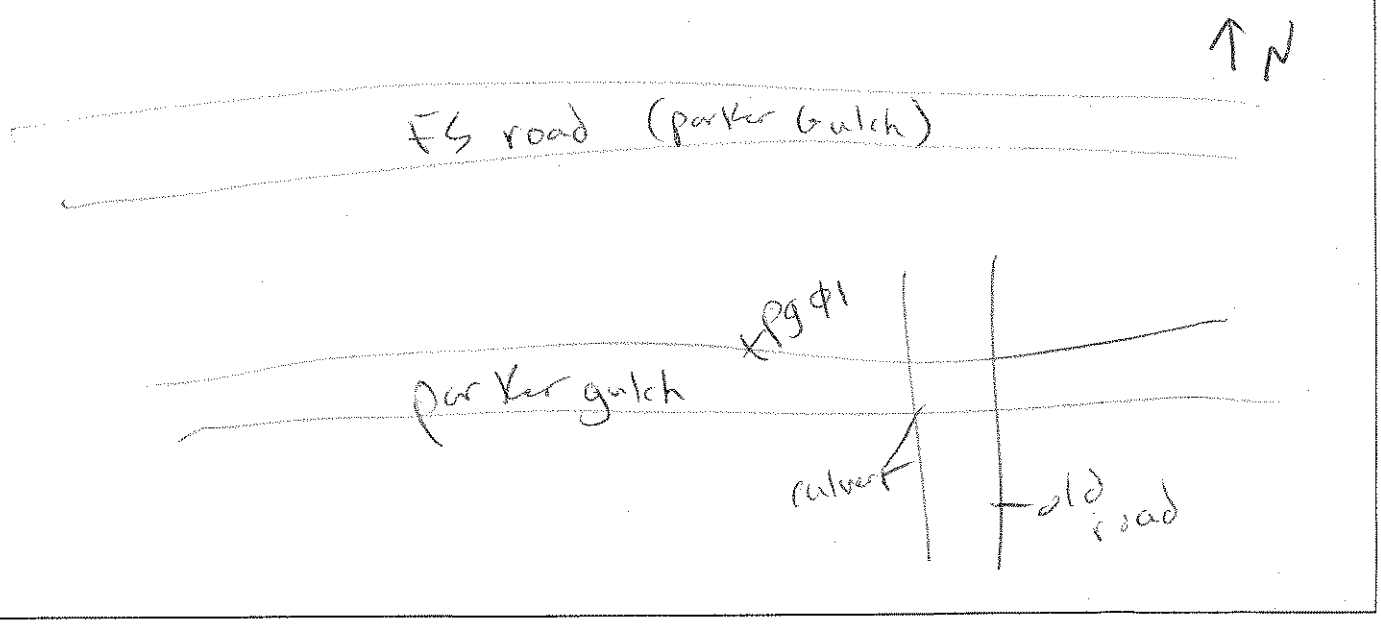
Sample Location:

Latitude: 43.684 379 Longitude: -114.304598

Photographs:

File No.	Time	Dir	Description
1994	1352	E	Sample location PG01
1995	1352	Dwn	SD sample

Site Sketch:



Sample Team: JH + AM Date: 6/16/08

Logbook Number/ Page: /

☐ Wetland ☑ Stream Name: Elkhorn Gulch BG03

Water Quality Parameters"

Flow rate	0-10 cfs/gpm	**DO (mg/L)**	7.50
Temp (° C)	9.8	**Turb (NTU)**	10
pH:	7.9	**Salin (%)**	0.03
Cond (mS/cm)	0.820	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: lt. brown

Grain Size: coarse

Organic Content: ☐ none ☑ slight ☐ moderate ☐ heavy

Odor? ☑ yes ☐ No Description: ocean/salt water

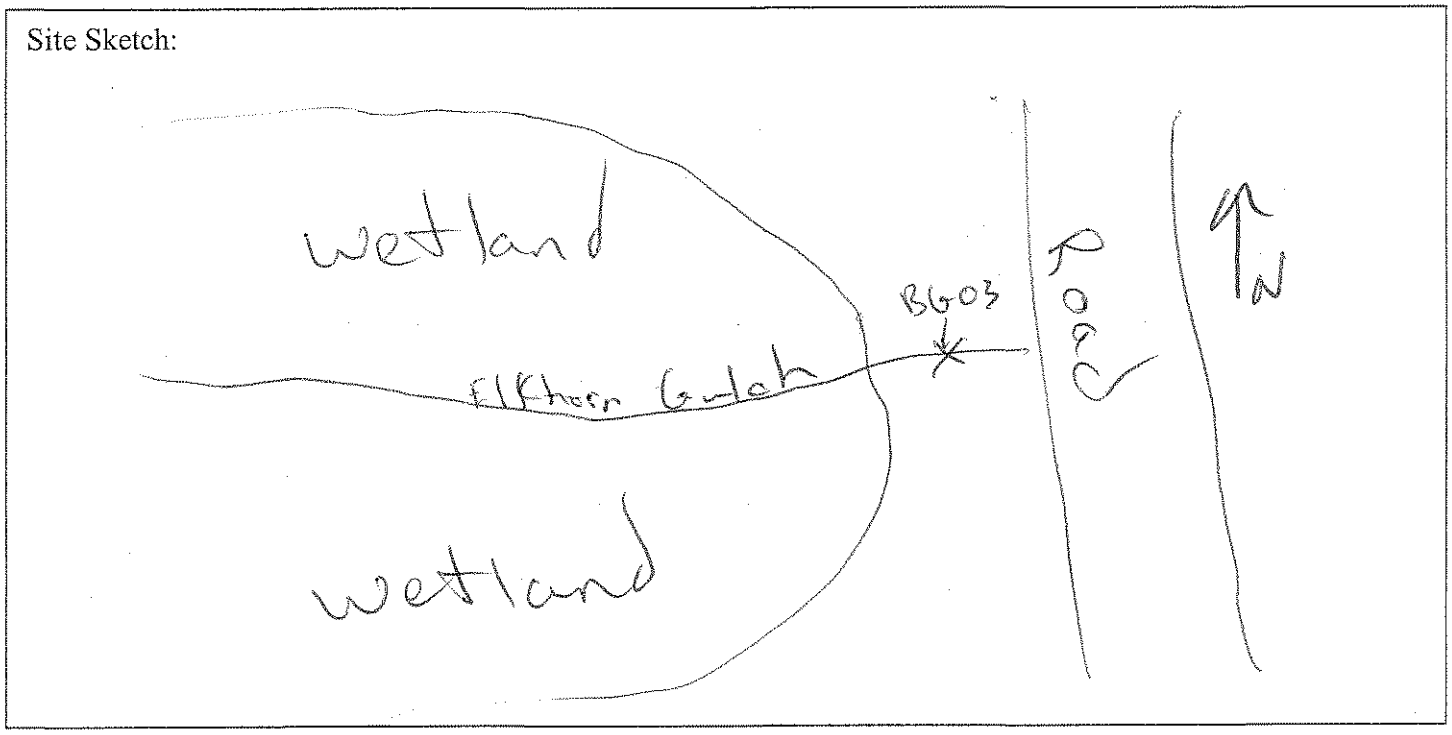
Sample Location:

Latitude: 43.67 7918 Longitude: -114.31097 1

Photographs:

File No.	Time	Dir	Description
101-1931	1040	S	Sample location BG03
1932	1040	Dwn	SW/SD sample at

Site Sketch:



Sample Team: JH + AM Sampler: JH Date: 6/18/08 1444

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Independence Creek IC01 ✓

Water Quality Parameters"

Flow rate	10-100 cfs/gpm	**DO (mg/L)**	6.91
Temp (° C)	13	**Turb (NTU)**	bad reading ~ >100 noticible TSS
pH:	8.35	**Salin (%)**	0.02
Cond (mS/cm)	0.684	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: dark brown

Grain Size: coarse sand w/ small cobbles & silt

Organic Content: ☐ none ☐ slight ☑ moderate ☐ heavy

Odor? ☐ yes ☑ No Description: _____

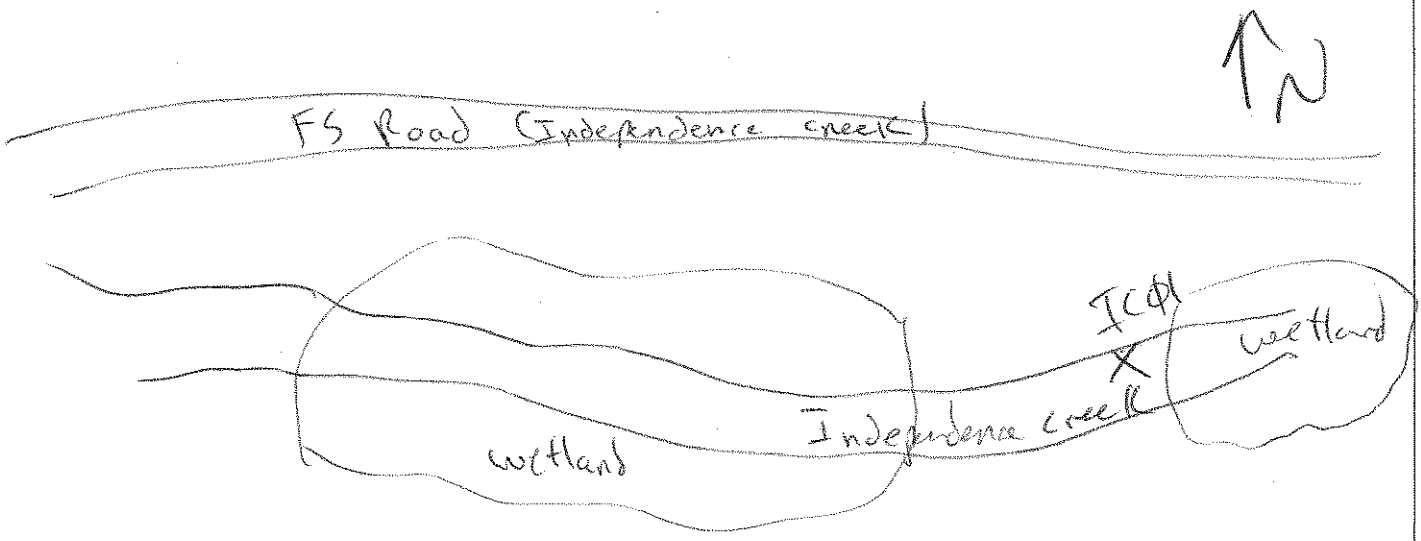
Sample Location:

Latitude: 43.671761 Longitude: -114.303457

Photographs:

File No.	Time	Dir	Description
AM 4496987	1414	E	Sample location IC01
1418 1447 PM	1414	Dwn	

Site Sketch:



Sample Team: JH + AM Sampler: AM Date: 6/18/08 1435

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Elkhorn Creek EC#2

Water Quality Parameters"

Flow rate	10-100 (cfs)/gpm	**DO (mg/L)**	10.87
Temp (° C)	16.4	**Turb (NTU)**	bad reading ~<100
pH:	8.74	**Salin (%)**	0.01
Cond (mS/cm)	0.657	**Redox:**	

Sediment Sample Description"

Moisture: ☒ wet ☐ dry

Color: grey to black

Grain Size: silt w/ coarse sand and small cobbles

Organic Content: ☐ none ☐ slight ☒ moderate ☐ heavy

Odor? ☒ yes ☐ No Description: Swampy

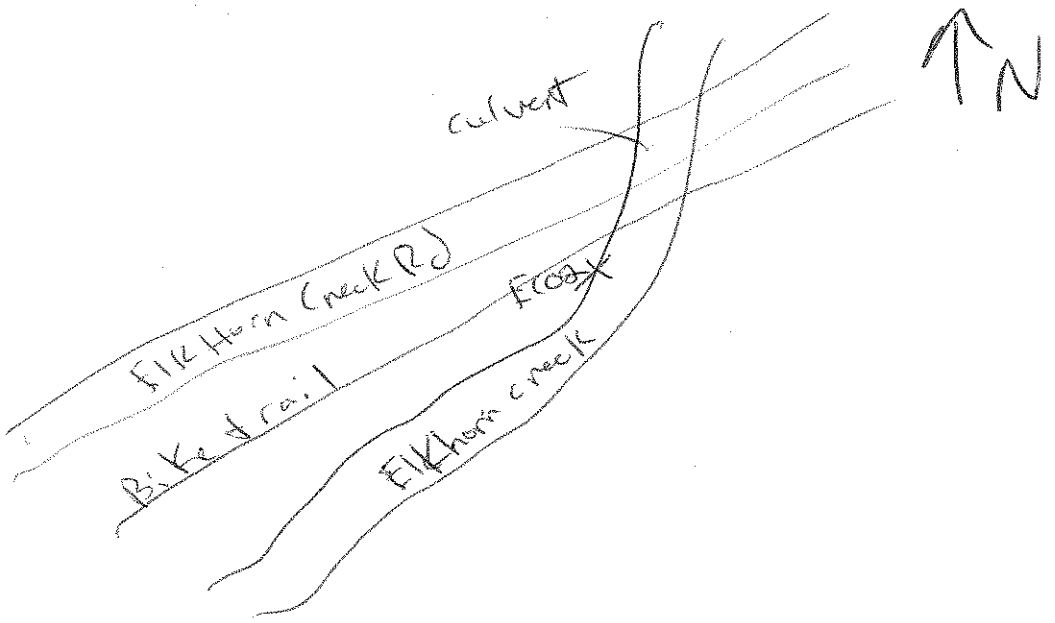
Sample Location:

Latitude: 43.663847 Longitude: -114.329115

Photographs:

File No.	Time	Dir	Description
1999	1435	NE	Sample Location EC#2
2000	1435	Down	SD/SW samples

Site Sketch:



Sample Team: BC + AM Sampler: BC Date: 6/19/08 0816

Logbook Number/ Page: /

☐ Wetland ☐ Stream Name: Greenhorn Gulch GG02 ✓

Water Quality Parameters"

Flow rate	<0 cfs/gpm	**DO (mg/L)**	11.36
Temp (° C)	7.4	**Turb (NTU)**	bad reading <50
pH:	9.08	**Salin (%)**	0
Cond (mS/cm)	0.139	**Redox:**	

Sediment Sample Description"

Moisture: ☑ wet ☐ dry

Color: Brown

Grain Size: medium sand to silt moderately grated

Organic Content: ☑ none ☐ slight ☐ moderate ☐ heavy

Odor? ☐ yes ☑ No Description:

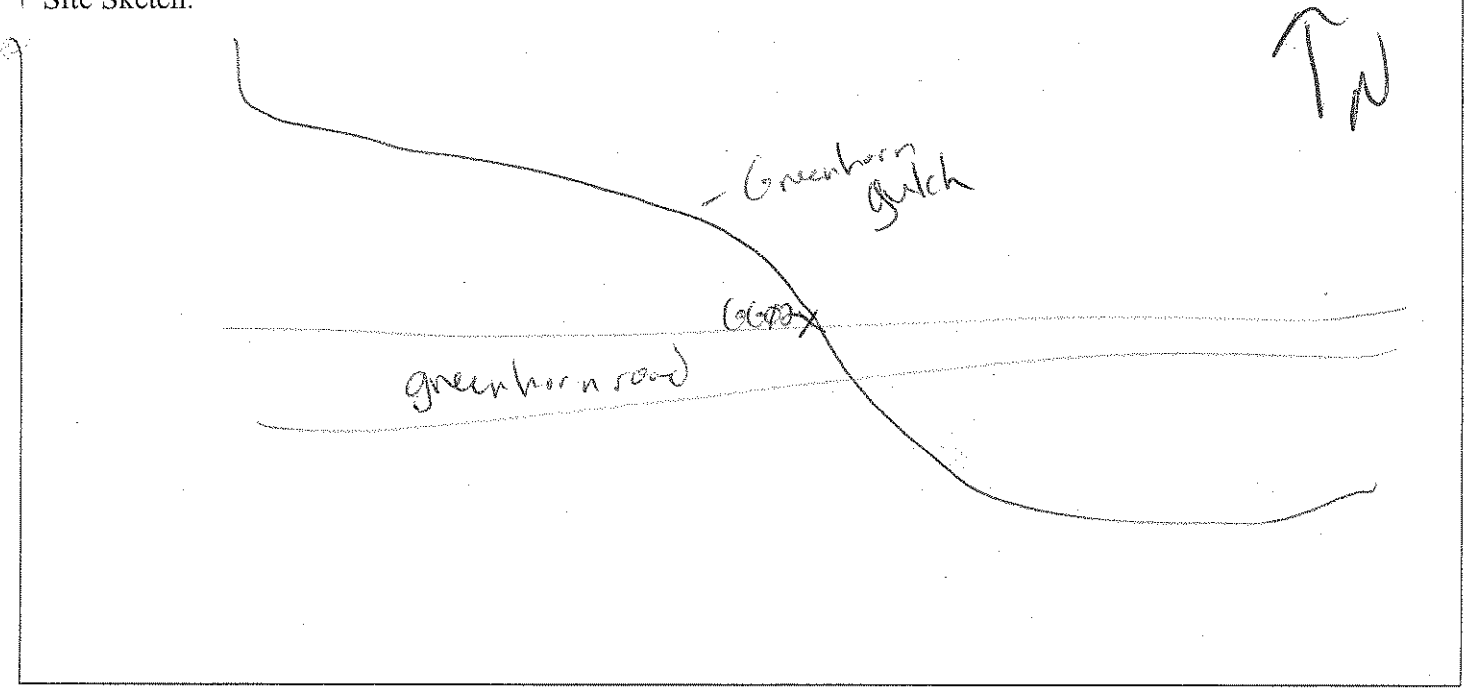
Sample Location:

Latitude: 43.593686 Longitude: -114.374923

Photographs:

File No.	Time	Dir	Description
2003	0916	E	Sample location GG02
2004	0916	Down	SD/SW samples

Site Sketch:



C Photographic Documentation

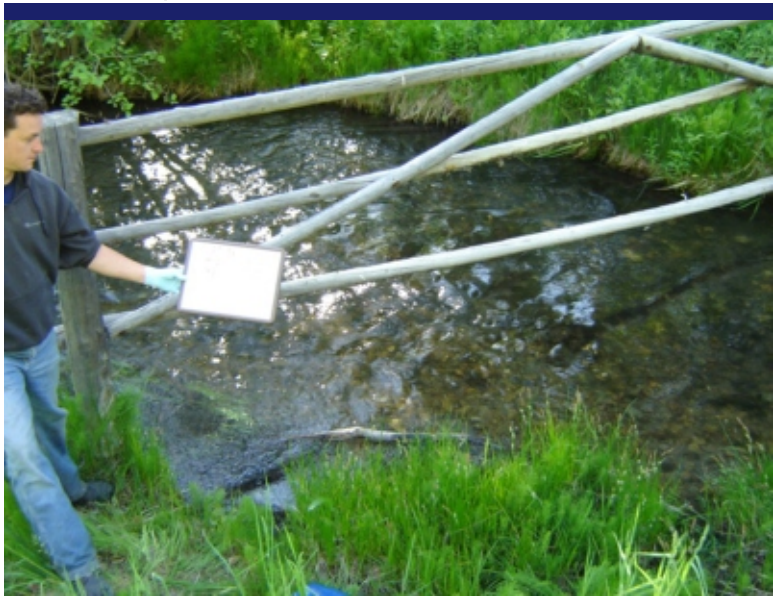


Photo 1 Sample location BR24 on the Big Wood River.

Direction: *East* *Date: 6/18/08* *Time: 08:20* *Taken By: AM/JH*



Photo 2 Surface water and sediment samples BR24SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 08:20* *Taken By: AM/JH*



Photo 3 Sediment sample NG01SD.

Direction: *Down* *Date: 6/18/08* *Time: 08:41* *Taken By: AM/JH*



Photo 4 Sample location NG01 on Minnie Moore Gulch.

Direction: *West* *Date: 6/18/08* *Time: 08:41* *Taken By: AM/JH*

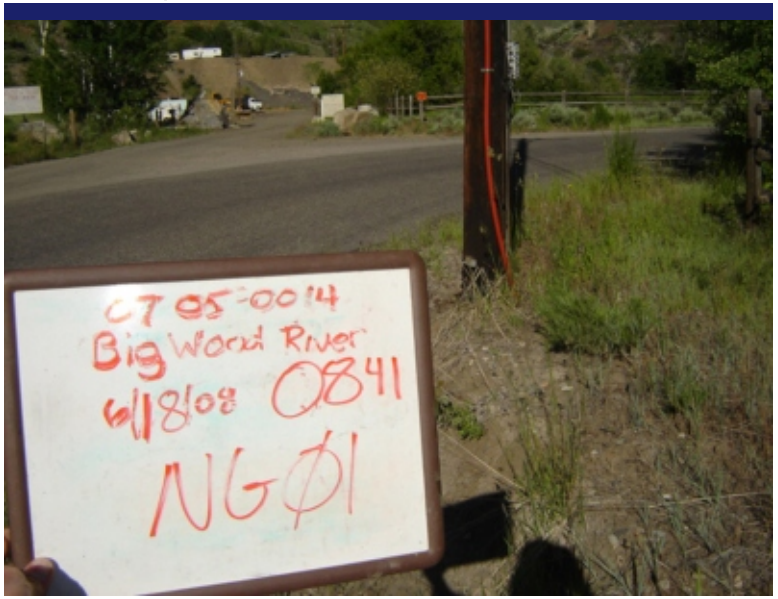


Photo 5 Sample location NG01 on Minnie Moore Gulch.

Direction: *West* *Date: 6/18/08* *Time: 08:41* *Taken By: AM/JH*



Photo 6 Sample location BR23 on the Big Wood River.

Direction: *West* *Date: 6/18/08* *Time: 09:00* *Taken By: AM/JH*



Photo 7 Surface water and sediment samples BR23SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 09:00* *Taken By: AM/JH*



Photo 8 Sample location SG01 on Star Gulch.

Direction: *East* *Date: 6/18/08* *Time: 09:40* *Taken By: AM/JH*



Photo 9 Sediment sample SG01SD.

Direction: *Down* *Date: 6/18/08* *Time: 09:40* *Taken By: AM/JH*



Photo 10 Sample location BR22 on the Big Wood River.

Direction: *North* *Date: 6/18/08* *Time: 09:58* *Taken By: AM/JH*



Photo 11 Surface water and sediment samples BR22SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 09:58* *Taken By: AM/JH*

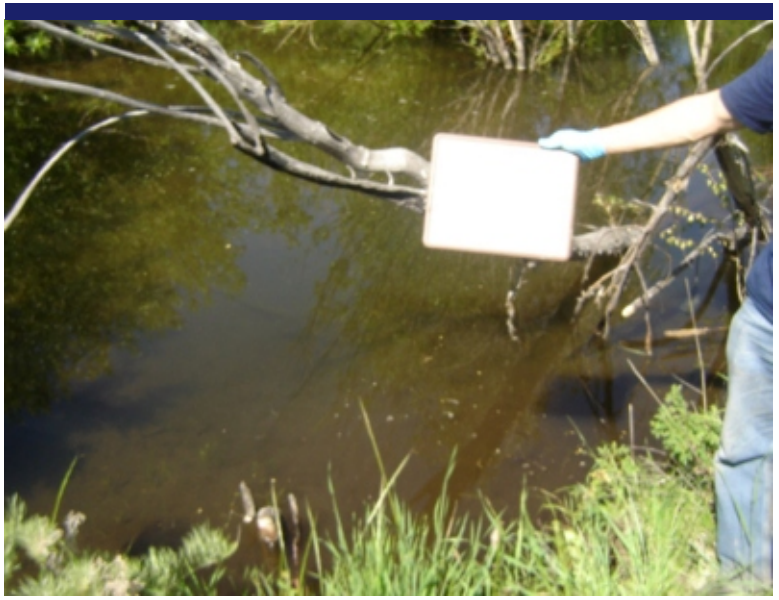


Photo 12 Sample location LG01 on Lee's Gulch.

Direction: *South* *Date: 6/18/08* *Time: 10:45* *Taken By: AM/JH*



Photo 13 Surface water and sediment samples LG01SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 10:45* *Taken By: AM/JH*



Photo 14 Sample location BR21 on the Big Wood River.

Direction: *Northwest* *Date: 6/18/08* *Time: 11:05* *Taken By: AM/JH*



Photo 15 Surface water and sediment samples BR21SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 11:05* *Taken By: AM/JH*



Photo 16 Sample location BR20 on the Big Wood River.

Direction: *Southeast* *Date: 6/18/08* *Time: 11:20* *Taken By: AM/JH*



Photo 17 Surface water and sediment samples BR20SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 11:20* *Taken By: AM/JH*



Photo 18 Sample location PG01 on Parker Gulch.

Direction: *East* *Date: 6/18/08* *Time: 13:52* *Taken By: AM/JH*



Photo 19 Sediment sample PG01SD.

Direction: *Down* *Date: 6/18/08* *Time: 13:52* *Taken By: AM/JH*



Photo 20 Sample location IC01 on Independence Creek.

Direction: *East* *Date: 6/18/08* *Time: 14:14* *Taken By: AM/JH*



Photo 21 Surface water and sediment sample IC01SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 14:14* *Taken By: AM/JH*

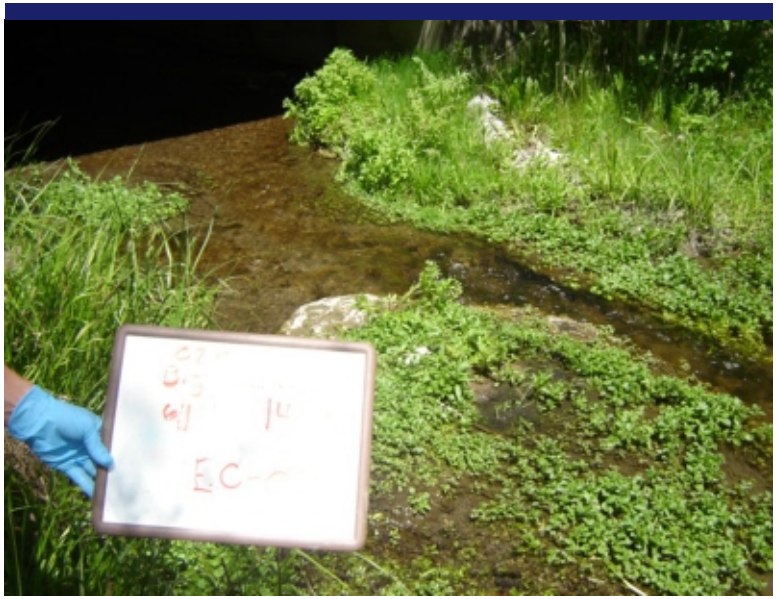


Photo 22 Sample location EC02 on Elkhorn Gulch.

Direction: *Northeast* *Date: 6/18/08* *Time: 14:35* *Taken By: AM/JH*



Photo 23 Surface water and sediment sample EC02SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 14:35* *Taken By: AM/JH*



Photo 24 Sample location RC01 on Clear Creek.

Direction: *Southwest* *Date: 6/18/08* *Time: 15:10* *Taken By: AM/JH*



Photo 25 Surface water and sediment sample RC01SW/SD.

Direction: *Down* *Date: 6/18/08* *Time: 15:10* *Taken By: AM/JH*



Photo 26 Background sample location GG02 on Greenhorn Gulch.

Direction: *Date: 6/19/08* *Time: 08:16* *Taken By: AM/JH*



Photo 27 Surface water and sediment samples GG02SW/SD.

Direction: *Down* *Date: 6/19/08* *Time: 08:16* *Taken By: AM/JH*



Photo 28 Sample location WD07 in wetlands on the Big Wood River.

Direction: *West* *Date: 6/19/08* *Time: 08:57* *Taken By: AM/JH*



Photo 29 Surface water and sediment samples WD07SW/SD.

Direction: *Down* *Date: 6/19/08* *Time: 08:57* *Taken By: AM/JH*



Photo 30 Sample location WD08 in wetlands on the Big Wood River.

Direction: *East* *Date: 6/19/08* *Time: 10:06* *Taken By: AM/JH*



Photo 31 Surface water and sediment samples WD08SW/SD.

Direction: *Down* *Date: 6/19/08* *Time: 10:06* *Taken By: AM/JH*



Photo 32 Sample location WD09 in wetlands on the Big Wood River.

Direction: *West* *Date: 6/19/08* *Time: 11:16* *Taken By: AM/JH*



Photo 33 Surface water and sediment samples WD09SW/SD.

Direction: *Down* *Date: 6/19/08* *Time: 11:16* *Taken By: AM/JH*



Photo 34 Sample location WD10 in wetlands on the Big Wood River.

Direction: *East* *Date: 6/19/08* *Time: 13:32* *Taken By: AM/JH*



Photo 35 Surface water and sediment samples WD10SW/SD.

Direction: *Down* *Date: 6/19/08* *Time: 13:32* *Taken By: AM/JH*



Photo 36 Sample location BG04.

Direction: *West* *Date: 6/16/08* *Time: 09:40* *Taken By: AM/JH*



Photo 37 Surface water and sediment samples BG04SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 09:40* *Taken By: AM/JH*



Photo 38 Sample location BG03 on the Big Wood River.

Direction: *South* *Date: 6/16/08* *Time: 10:40* *Taken By: AM/JH*



Photo 39 Surface water and sediment samples BG03SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 10:40* *Taken By: AM/JH*



Photo 40 Background sample location BG01 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 11:00* *Taken By: AM/JH*



Photo 41 Surface water and sediment samples BG01SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 11:00* *Taken By: AM/JH*



Photo 42 Background wetland sample location BG02 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 11:35* *Taken By: AM/JH*



Photo 43 Surface water and sediment samples BG02SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 11:35* *Taken By: AM/JH*



Photo 44 Sample location WC01 on Warm Springs Creek.

Direction: *South* *Date: 6/16/08* *Time: 13:55* *Taken By: AM/JH*

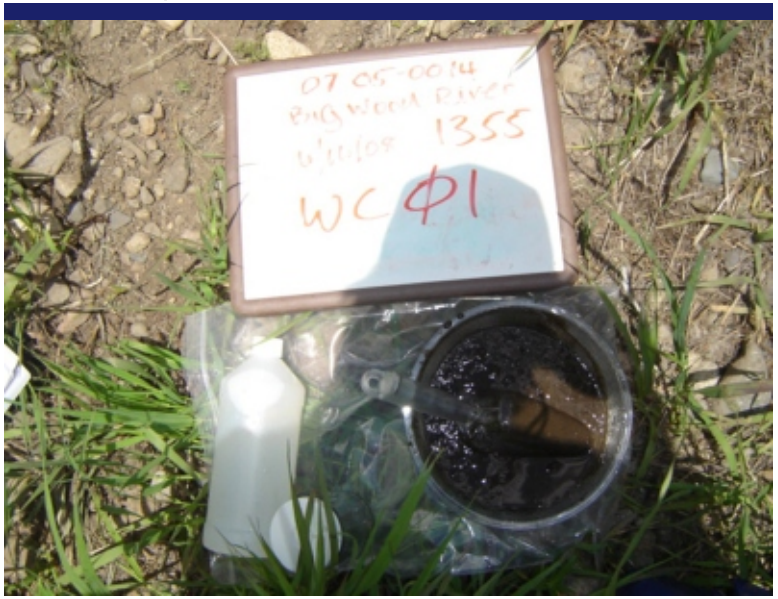


Photo 45 Surface water and sediment samples WC01SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 13:55* *Taken By: AM/JH*



Photo 46 Sample location BR35 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 14:25* *Taken By: AM/JH*



Photo 47 Surface water and sediment samples BR35SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 14:25* *Taken By: AM/JH*



Photo 48 Sample location BR34 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 15:10* *Taken By: AM/JH*



Photo 49 Surface water and sediment samples BR34SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 15:10* *Taken By: AM/JH*

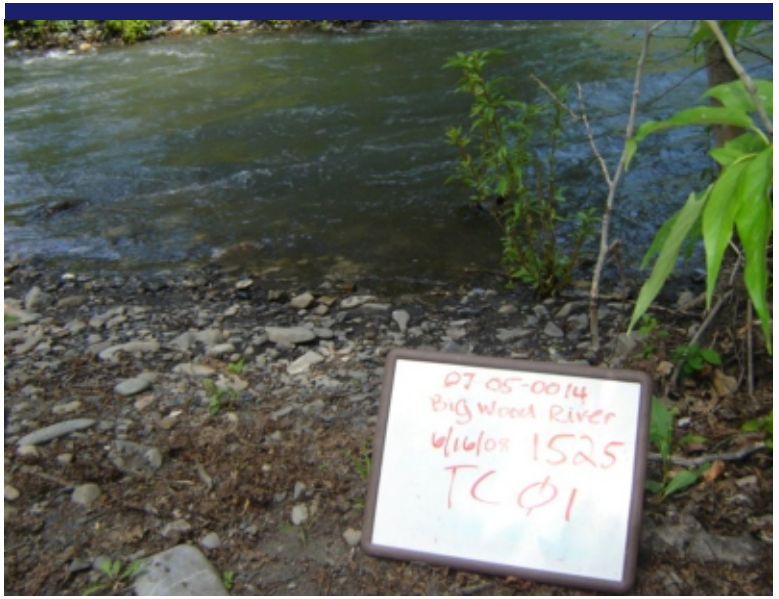


Photo 50 Sample location TC01 on Trail Creek.

Direction: *East* *Date: 6/16/08* *Time: 15:25* *Taken By: AM/JH*



Photo 51 Surface water and sediment samples TC01SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 15:25* *Taken By: AM/JH*

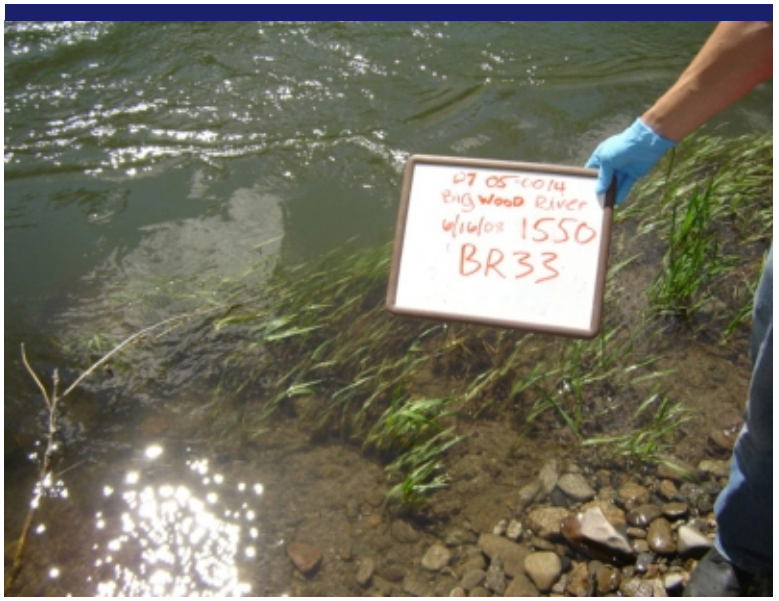


Photo 52 Sample location BR33 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 15:50* *Taken By: AM/JH*



Photo 53 Surface water and sediment samples BR33SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 15:50* *Taken By: AM/JH*



Photo 54 Catch and release sign.

Direction: *South* *Date: 6/16/08* *Time: 16:45* *Taken By: AM/JH*



Photo 55 Sample location BR32 on the Big Wood River.

Direction: *South* *Date: 6/16/08* *Time: 16:50* *Taken By: AM/JH*



Photo 56 Surface water and sediment samples BR32SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 16:50* *Taken By: AM/JH*



Photo 57 Sample location EC01 on Elkhorn Gulch.

Direction: *Southeast* *Date: 6/16/08* *Time: 17:20* *Taken By: AM/JH*



Photo 58 Surface water and sediment samples EC01SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 17:20* *Taken By: AM/JH*



Photo 59 Sample location BR31 on the Big Wood River.

Direction: *West* *Date: 6/16/08* *Time: 17:40* *Taken By: AM/JH*



Photo 60 Surface water and sediment samples BR31SW/SD.

Direction: *Down* *Date: 6/16/08* *Time: 17:40* *Taken By: AM/JH*



Photo 61 Sample location BR30 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 08:12* *Taken By: AM/JH*



Photo 62 Surface water and sediment samples BR30SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 08:12* *Taken By: AM/JH*

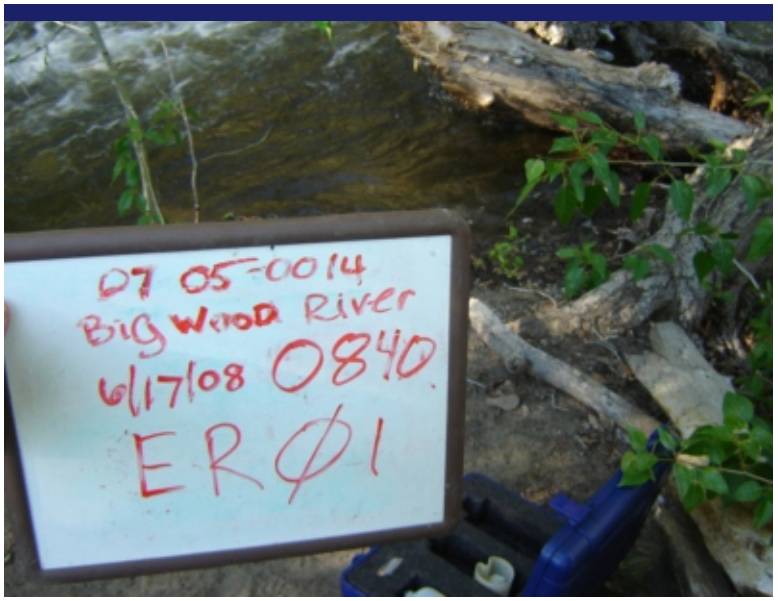


Photo 63 Sample location ER01 on the Big Wood River.

Direction: *South* *Date: 6/17/08* *Time: 08:40* *Taken By: AM/JH*



Photo 64 Surface water and sediment samples EC01SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 08:40* *Taken By: AM/JH*



Photo 65 Sample location BR29 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 08:58* *Taken By: AM/JH*



Photo 66 Surface water and sediment samples BR29SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 08:58* *Taken By: AM/JH*



Photo 67 Sample location BR28 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 10:00* *Taken By: AM/JH*



Photo 68 Surface water and sediment samples BR28SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 10:00* *Taken By: AM/JH*



Photo 69 Sample location GG01 on Greenhorn Gulch.

Direction: *South* *Date: 6/17/08* *Time: 10:10* *Taken By: AM/JH*



Photo 70 Surface water and sediment samples GG01SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 10:10* *Taken By: AM/JH*



Photo 71 Sample location BR27 on the Big Wood River.

Direction: *West* *Date: 6/17/08* *Time: 11:00* *Taken By: AM/JH*



Photo 72 Surface water and sediment samples BR27SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 11:00* *Taken By: AM/JH*

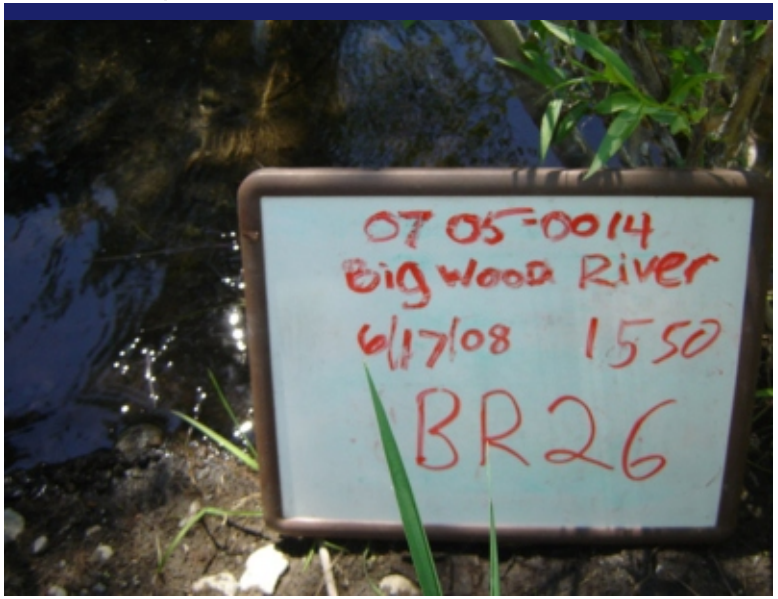


Photo 73 Sample location BR26 on the Big Wood River.

Direction: *West* *Date: 6/17/08* *Time: 15:50* *Taken By: AM/JH*



Photo 74 Surface water and sediment sample BR26SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 15:50* *Taken By: AM/JH*



Photo 75 Sample location MG01 on Mammoth Gulch.

Direction: *West* *Date: 6/17/08* *Time: 16:05* *Taken By: AM/JH*



Photo 76 Sample location MG01 on Mammoth Gulch.

Direction: *Down* *Date: 6/17/08* *Time: 16:05* *Taken By: AM/JH*



Photo 77 Sediment sample MG01SD.

Direction: *Down* *Date: 6/17/08* *Time: 16:05* *Taken By: AM/JH*



Photo 78 Sample location BR25 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 16:30* *Taken By: AM/JH*



Photo 79 Surface water and sediment sample locations BR25SW/SD.

Direction: *Down* *Date: 6/17/08* *Time: 16:30* *Taken By: AM/JH*



Photo 80 Surface water and sediment samples TG01SW/SD collected from Townsend Gulch.

Direction: *North* *Date: 6/18/08* *Time: 11:18* *Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho



Photo 81

Direction:	*Date:*	*Time:*	*Taken By: BC/ZL*



Photo 82 Big Wood River catch and release sign at Bellevue, Idaho.

Direction: *South*	*Date: 6/16/08*	*Time: 12:00*	*Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho

TDD Number: 07-05-0014
Photographed by: Andy Maguire (AM), Josh Hancock (JH)
Brian Ceiko (BC), Zecca Lehn (ZL)



Photo 83 Close-up of Big Wood River catch and release sign at Bellevue, Idaho.

Direction: *South* *Date: 6/16/08* *Time: 12:01* *Taken By: BC/ZL*



Photo 84 Sample location BR02 on the Big Wood River and surface water and sediment samples BR02SW/SD.

Direction: *West* *Date: 6/16/08* *Time: 12:40* *Taken By: BC/ZL*



Photo 85 Sample location BR01 on the Big Wood River and surface water and sediment samples BR01SW/SD.

Direction: *East* *Date: 6/16/08* *Time: 15:45* *Taken By: BC/ZL*



Photo 86 No trespassing sign.

Direction: *Date: 6/16/08* *Time:* *Taken By: BC/ZL*



Photo 87 Gravel road through farmland.

Direction: *Date: 6/16/08* *Time:* *Taken By: BC/ZL*



Photo 88 Mammoth Gulch road sign.

Direction: *Date: 6/16/08* *Time:* *Taken By: BC/ZL*



Photo 89 Water Gulch ranch sign.

Direction: *Date: 6/16/08* *Time:* *Taken By: BC/ZL*



Photo 90 Possibly dry Water Gulch; not sampled.

Direction: *Date: 6/16/08* *Time:* *Taken By: BC/ZL*



Photo 91 Surface water and sediment samples CG01SW/SD collected from Colorado Gulch.

Direction: *South* *Date: 6/17/08* *Time: 09:37* *Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho



Photo 92 Colorado Gulch.

Direction: *West* *Date: 6/17/08* *Time: 09:38* *Taken By: BC/ZL*



Photo 93 Surface water and sediment samples BR04SW/SD collected from the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 10:30* *Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho

TDD Number: 07-05-0014
Photographed by: Andy Maguire (AM), Josh Hancock (JH)
Brian Ceiko (BC), Zecca Lehn (ZL)



Photo 94 Sample location BR04 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 10:31* *Taken By: BC/ZL*



Photo 95 In descript gulch or land.

Direction: *Date: 6/17/08* *Time:* *Taken By: BC/ZL*



Photo 96 In descript gulch or land.

Direction:	*Date: 6/17/08*	*Time:*	*Taken By: BC/ZL*



Photo 97 Culvert beneath metal grate.

Direction:	*Date: 6/17/08*	*Time:*	*Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho



Photo 98 Metal grate.

Direction: *Date: 6/17/08* *Time:* *Taken By: BC/ZL*



Photo 99 Metal grate.

Direction: *Date: 6/17/08* *Time:* *Taken By: BC/ZL*



Photo 100 Surface water and sediment samples BR05SW/SD collected from the Big Wood River.

Direction: *Northwest* *Date: 6/17/08* *Time: 13:26* *Taken By: BC/ZL*



Photo 101 Sample location BR05 on the Big Wood River.

Direction: *North* *Date: 6/17/08* *Time: 13:26* *Taken By: BC/ZL*



Photo 102 Surface water and sediment samples CC01SW/SD collected from Croy Creek.

Direction: *South* *Date: 6/17/08* *Time: 13:40* *Taken By: BC/ZL*



Photo 103 Sample location CC01 on Croy Creek.

Direction: *North* *Date: 6/17/08* *Time: 13:40* *Taken By: BC/ZL*



Photo 104 Surface water and sediment samples BR06SW/SD collected from the Big Wood River.

Direction: *South* *Date: 6/17/08* *Time: 14:00* *Taken By: BC/ZL*



Photo 105 Sample location BR06 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 14:00* *Taken By: BC/ZL*



Photo 106 Dry stream bed.

Direction:	*Date: 6/17/08*	*Time:*	*Taken By: BC/ZL*



Photo 107 Quigley Gulch no trespassing sign.

Direction:	*Date: 6/17/08*	*Time:*	*Taken By: BC/ZL*



Photo 108 Dry stream bed and metal grates.

Direction: *Date: 6/17/08* *Time:* *Taken By: BC/ZL*



Photo 109 Fisherman near mouth of Dear Creek.

Direction: *East* *Date: 6/17/08* *Time: 17:30* *Taken By: BC/ZL*



Photo 110 Surface water and sediment samples BR07SW/SD collected from the Big Wood River.

Direction: *West* *Date: 6/17/08* *Time: 17:30* *Taken By: BC/ZL*

BIG WOOD RIVER
Blaine County, Idaho

TDD Number: 07-05-0014
Photographed by: Andy Maguire (AM), Josh Hancock (JH)
Brian Ceiko (BC), Zecca Lehn (ZL)



Photo 111 Sample location BR07 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 17:30* *Taken By: BC/ZL*



Photo 112 Surface water and sediment samples DC01SW/SD collected from Deer Creek.

Direction: *East* *Date: 6/17/08* *Time: 17:51* *Taken By: BC/ZL*



Photo 113 Sample location DC01 on Deer Creek.

Direction: *Southwest* *Date: 6/17/08* *Time: 17:51* *Taken By: BC/ZL*



Photo 114 Surface water and sediment samples BR08SW/SD collected from the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 18:12* *Taken By: BC/ZL*



Photo 115 Sample location BR08 on the Big Wood River.

Direction: *East* *Date: 6/17/08* *Time: 18:12* *Taken By: BC/ZL*



Photo 116 Surface water and sediment samples WD01SW/SD collected from wetlands on the Big Wood River.

Direction: *East* *Date: 6/18/08* *Time: 09:33* *Taken By: BC/ZL*



Photo 117 Sample location WD01.

Direction: *West* *Date: 6/18/08* *Time: 09:34* *Taken By: BC/ZL*



Photo 118 Surface water and sediment samples WD02SW/SD collected from wetlands on the Big Wood River.

Direction: *East* *Date: 6/18/08* *Time: 10:32* *Taken By: BC/ZL*



Photo 119 Sample location WD02.

Direction: *North* *Date: 6/18/08* *Time: 10:32* *Taken By: BC/ZL*



Photo 120 Surface water and sediment samples WD03SW/SD collected from wetlands on the Big Wood River.

Direction: *North* *Date: 6/18/08* *Time: 10:32* *Taken By: BC/ZL*



Photo 121 Sample location WD03.

Direction: *East* *Date: 6/18/08* *Time: 11:59* *Taken By: BC/ZL*



Photo 122 Sample location WD04.

Direction: *East* *Date: 6/18/08* *Time: 14:25* *Taken By: BC/ZL*



Photo 123 Surface water and sediment samples WD04SW/SD collected from wetlands on the Big Wood River.

Direction: *North* *Date: 6/18/08* *Time: 14:35* *Taken By: BC/ZL*



Photo 124 Surface water and sediment samples WD05SW/SD collected from wetlands on the Big Wood River.

Direction: *North* *Date: 6/18/08* *Time: 13:25* *Taken By: BC/ZL*



Photo 125 Sample location WD05.

Direction: *South* *Date: 6/18/08* *Time: 13:25* *Taken By: BC/ZL*



Photo 126 Sample location WD06.

Direction: *South* *Date: 6/18/08* *Time: 16:50* *Taken By: BC/ZL*

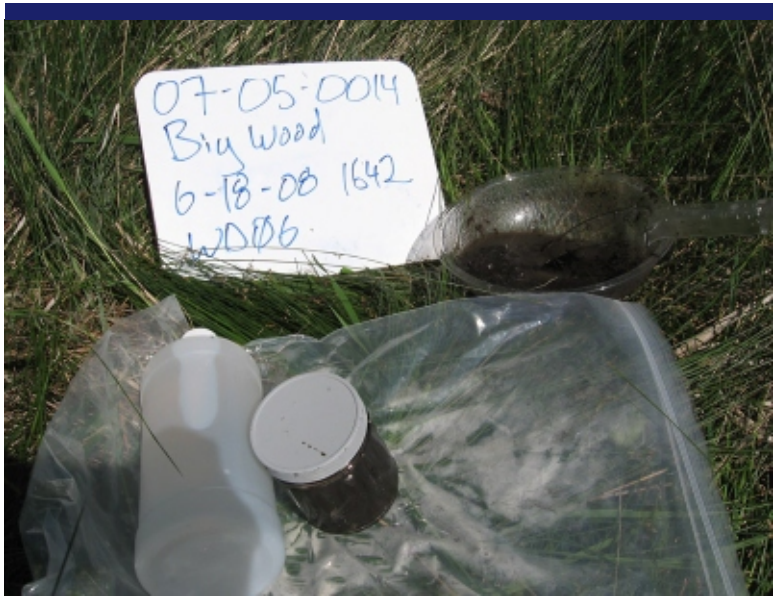


Photo 127 Surface water and sediment samples WD06SW/SD collected from wetlands on the Big Wood River.

Direction: *North* *Date: 6/18/08* *Time: 16:50* *Taken By: BC/ZL*



Photo 128 Surface water and sediment samples BR03SW/SD.

Direction: *Northwest* *Date: 6/17/08* *Time: 10:04* *Taken By: BC/ZL*



Photo 129 Mouth of Colorado Gulch at Big Wood River.

Direction: *West* *Date: 6/17/08* *Time: 10:04* *Taken By: BC/ZL*

D Global Positioning System Coordinates

Table D-1 Global Positioning System Information - Big Wood River Site Inspection

Sample Location	Location Description	Sample Date	Latitude	Longitude
BG01	Big Wood River	6/16/2008	43.686555	-114.371804
BG02	Big Wood River Wetland	6/16/2008	43.689749	-114.371774
BG03	Elkhorn Gulch	6/16/2008	43.677923	-114.310954
BG04	Parker Gulch	6/16/2008	43.700201	-114.282358
BR01	Big Wood River	6/16/2008	43.441219	-114.26158
BR02	Big Wood River	6/16/2008	43.457827	-114.260287
BR03	Big Wood River	6/17/2008	43.496916	-114.305718
BR04	Big Wood River	6/17/2008	43.497603	-114.306571
BR05	Big Wood River	6/17/2008	43.512288	-114.318159
BR06	Big Wood River	6/17/2008	43.513244	-114.318398
BR07	Big Wood River	6/17/2008	43.552729	-114.341011
BR08	Big Wood River	6/17/2008	43.554874	-114.341019
BR20	Big Wood River	6/18/2008	43.454063	-114.266224
BR21	Big Wood River	6/18/2008	43.455356	-114.268212
BR22	Big Wood River	6/18/2008	43.489301	-114.29644
BR23	Big Wood River	6/18/2008	43.468495	-114.280239
BR24	Big Wood River	6/18/2008	43.474646	-114.285729
BR25	Big Wood River	6/17/2008	43.477541	-114.290975
BR26	Big Wood River	6/17/2008	43.478714	-114.291565
BR27	Big Wood River	6/17/2008	43.586843	-114.347216
BR28	Big Wood River	6/17/2008	43.589517	-114.349748
BR29	Big Wood River	6/17/2008	43.599125	-114.344866
BR30	Big Wood River	6/17/2008	43.605217	-114.345888
BR31	Big Wood River	6/16/2008	43.653315	-114.345376
BR32	Big Wood River	6/16/2008	43.654025	-114.347475
BR33	Big Wood River	6/16/2008	43.660458	-114.353803
BR34	Big Wood River	6/16/2008	43.670689	-114.365604
BR35	Big Wood River	6/16/2008	43.680507	-114.376324
CC01	Croy Creek	6/17/2008	43.512598	-114.318501
CG01	Colorado Gulch	6/17/2008	43.497261	-114.306446
DC01	Deer Creek	6/17/2008	43.553257	-114.340844
EC01	Elkhorn Gulch	6/16/2008	43.653925	-114.346092
EC02	Elkhorn Gulch	6/18/2008	43.663846	-114.329101
ER01	East Fork Big Wood River	6/17/2008	43.603547	-114.334649
GG01	Greenhorn Gulch	6/17/2008	43.589394	-114.350167
GG02	Greenhorn Gulch	6/19/2008	43.593685	-114.374924
IC01	Independence Creek	6/18/2008	43.671755	-114.303455
LG01	Lee's Gulch	6/18/2008	43.453005	-114.283279
MG01	Mammoth Gulch	6/17/2008	43.478408	-114.292787
NG01	Minnie Moore Gulch	6/18/2008	43.468748	-114.280997
PG01	Parker Gulch	6/18/2008	43.68438	-114.304594
RC01	Clear Creek	6/18/2008	43.639094	-114.36292
SG01	Star Gulch	6/18/2008	43.486122	-114.299492

Table D-1 Global Positioning System Information - Big Wood River Site Inspection

Sample Location	Location Description	Sample Date	Latitude	Longitude
TC01	Trial Creek	6/16/2008	43.671818	-114.360884
TG01	Townsend Gulch	6/18/2008	43.448419	-114.286476
WC01	Warm Springs Creek	6/16/2008	43.688414	-114.381256
WD01	Big Wood River Wetland	6/18/2008	43.461701	-114.259581
WD02	Big Wood River Wetland	6/18/2008	43.474587	-114.279978
WD03	Big Wood River Wetland	6/18/2008	43.488165	-114.286887
WD04	Big Wood River Wetland	6/18/2008	43.503431	-114.308222
WD05	Big Wood River Wetland	6/18/2008	43.535975	-114.332972
WD06	Big Wood River Wetland	6/18/2008	43.577806	-114.338861
WD07	Big Wood River Wetland	6/19/2008	43.638259	-114.344514
WD08	Big Wood River Wetland	6/19/2008	43.629671	-114.347556
WD09	Big Wood River Wetland	6/19/2008	43.672719	-114.367487
WD10	Big Wood River Wetland	6/19/2008	43.430616	-114.260525

E

Chain-of-Custody Documentation

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1618	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9755	Sediment/ Andy Maguire	G	TM/Hg (21)	08254070 (Ice Only) (1)	BG01SD	S: 06/16/2008 11:02	--
MJ9756	Sediment/ Andy Maguire	G	TM/Hg (21)	08254071 (Ice Only) (1)	BG02SD	S: 06/16/2008 11:37	--
MJ9757	Sediment/ Andy Maguire	G	TM/Hg (21)	08254072 (Ice Only) (1)	BG03SD	S: 06/16/2008 10:42	--
MJ9758	Sediment/ Andy Maguire	G	TM/Hg (21)	08254073 (Ice Only) (1)	BG04SD	S: 06/16/2008 09:42	--
MJ9759	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254074 (Ice Only) (1)	BR01SD	S: 06/16/2008 15:42	--
MJ9760	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254075 (Ice Only) (1)	BR02SD	S: 06/16/2008 12:42	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ9755, MJ9756, MJ9757, MJ9758		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061808-0002

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1618	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9761	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254076 (Ice Only) (1)	BR03SD	S: 06/17/2008 09:55	--
MJ9762	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254077 (Ice Only) (1)	BR04SD	S: 06/17/2008 10:25	--
MJ9763	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254078 (Ice Only) (1)	BR05SD	S: 06/17/2008 13:13	--
MJ9764	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254079 (Ice Only) (1)	BR06SD	S: 06/17/2008 13:53	--
MJ9765	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254080 (Ice Only) (1)	BR07SD	S: 06/17/2008 17:33	--
MJ9766	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254081 (Ice Only) (1)	BR08SD	S: 06/17/2008 18:02	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ9755, MJ9756, MJ9757, MJ9758		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061808-0002

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1618	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9789	Sediment/ Josh Hancock	G	TM/Hg (21)	08254104 (Ice Only) (1)	BR31SD	S: 06/16/2008 17:42	--
MJ9790	Sediment/ Josh Hancock	G	TM/Hg (21)	08254105 (Ice Only) (1)	BR32SD	S: 06/16/2008 16:47	--
MJ9791	Sediment/ Josh Hancock	G	TM/Hg (21)	08254106 (Ice Only) (1)	BR33SD	S: 06/16/2008 15:52	--
MJ9792	Sediment/ Josh Hancock	G	TM/Hg (21)	08254107 (Ice Only) (1)	BR34SD	S: 06/16/2008 15:12	--
MJ9793	Sediment/ Josh Hancock	G	TM/Hg (21)	08254108 (Ice Only) (1)	BR35SD	S: 06/16/2008 14:27	--
MJ9799	Sediment/ Josh Hancock	G	TM/Hg (21)	08254114 (Ice Only) (1)	EC01SD	S: 06/16/2008 17:22	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ9755, MJ9756, MJ9757, MJ9758		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061808-0002

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1618	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ97B1	Sediment/ Josh Hancock	C	TM/Hg (21)	08254126 (Ice Only) (1)	TC01SD	S: 06/16/2008 15:27	--
MJ97B2	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254127 (Ice Only) (1)	TG01SD	S: 06/16/2008 11:20	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ9755, MJ9756, MJ9757, MJ9758		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061808-0002

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1640	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9778	Sediment/ Josh Hancock	G	TM/Hg (21)	08254093 (Ice Only) (1)	BR20SD	S: 06/18/2008 11:22	--
MJ9779	Sediment/ Josh Hancock	G	TM/Hg (21)	08254094 (Ice Only) (1)	BR21SD	S: 06/18/2008 11:07	--
MJ9780	Sediment/ Josh Hancock	G	TM/Hg (21)	08254095 (Ice Only) (1)	BR22SD	S: 06/18/2008 10:00	--
MJ9781	Sediment/ Josh Hancock	G	TM/Hg (21)	08254096 (Ice Only) (1)	BR23SD	S: 06/18/2008 09:02	--
MJ9782	Sediment/ Josh Hancock	G	TM/Hg (21)	08254097 (Ice Only) (1)	BR24SD	S: 06/18/2008 08:22	--
MJ9783	Sediment/ Andy Maguire	G	TM/Hg (21)	08254098 (Ice Only) (1)	BR25SD	S: 06/17/2008 16:33	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
Y			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0001

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PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1640		
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854		
Spill ID:	NA				
Site Name / City/State:	Big Wood River Blaine County, ID				
Project Leader:	Renee Nordeen				
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

Relinquished By	(Date/Time)	Received By	(Date/Time)
1			
2			
3			
4			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9784	Sediment/ Josh Hancock	G	TM/Hg (21)	08254099 (Ice Only) (1)	BR26SD	S: 06/17/2008 15:55	--
MJ9785	Sediment/ Josh Hancock	G	TM/Hg (21)	08254100 (Ice Only) (1)	BR27SD	S: 06/17/2008 11:02	--
MJ9786	Sediment/ Josh Hancock	G	TM/Hg (21)	08254101 (Ice Only) (1)	BR28SD	S: 06/17/2008 10:03	--
MJ9787	Sediment/ Josh Hancock	G	TM/Hg (21)	08254102 (Ice Only) (1)	BR29SD	S: 06/17/2008 09:00	--
MJ9788	Sediment/ Josh Hancock	G	TM/Hg (21)	08254103 (Ice Only) (1)	BR30SD	S: 06/17/2008 08:15	--
MJ9797	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254112 (Ice Only) (1)	CC01SD	S: 06/17/2008 13:42	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
Y			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1640	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9798	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254113 (Ice Only) (1)	DC01SD	S: 06/17/2008 17:46	--
MJ97A0	Sediment/ Josh Hancock	G	TM/Hg (21)	08254115 (Ice Only) (1)	ER01SD	S: 06/17/2008 08:42	--
MJ97A1	Sediment/ Josh Hancock	G	TM/Hg (21)	08254116 (Ice Only) (1)	GG01SD	S: 06/17/2008 10:12	--
MJ97A4	Sediment/ Josh Hancock	G	TM/Hg (21)	08254119 (Ice Only) (1)	LG01SD	S: 06/18/2008 10:47	--
MJ97A5	Sediment/ Josh Hancock	G	TM/Hg (21)	08254120 (Ice Only) (1)	MG01SD	S: 06/17/2008 16:08	--
MJ97A6	Sediment/ Josh Hancock	G	TM/Hg (21)	08254121 (Ice Only) (1)	NG01SD	S: 06/18/2008 08:43	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
Y			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1640	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ97B0	Sediment/ Josh Hancock	G	TM/Hg (21)	08254125 (Ice Only) (1)	SG01SD	S: 06/18/2008 09:42	--
MJ97B3	Sediment/ Josh Hancock	G	TM/Hg (21)	08254128 (Ice Only) (1)	WC01SD	S: 06/16/2008 13:57	--
MJ97C6	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254141 (Ice Only) (1)	CG01SD	S: 06/17/2008 09:33	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
Y			

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1949		
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854		
Spill ID:	NA				
Site Name / City/State:	Big Wood River Blaine County, ID				
Project Leader:	Renee Nordeen				
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

Relinquished By	(Date/Time)	Received By	(Date/Time)
1			
2			
3			
4			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9754	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254069 (HNO3) (1)	GG02SD	S: 06/19/2008 08:16	--
MJ97A2	Sediment/ Andy Maguire	G	TM/Hg (21)	08254117 (Ice Only) (1)	ECO2SD	S: 06/18/2008 14:37	--
MJ97A3	Sediment/ Josh Hancock	G	TM/Hg (21)	08254118 (Ice Only) (1)	IC01SD	S: 06/18/2008 14:16	--
MJ97A7	Sediment/ Josh Hancock	G	TM/Hg (21)	08254122 (Ice Only) (1)	RC01SD	S: 06/18/2008 15:12	--
MJ97A8	Sediment/ Josh Hancock	G	TM/Hg (21)	08254123 (Ice Only) (1)	PG01SD	S: 06/18/2008 13:52	--
MJ97B4	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254129 (Ice Only) (1)	WD01SD	S: 06/18/2008 09:32	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0003

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1949	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ97B5	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254130 (Ice Only) (1)	WD02SD	S: 06/18/2008 10:25	--
MJ97B6	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254131 (Ice Only) (1)	WD03SD	S: 06/18/2008 11:50	--
MJ97B7	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254132 (Ice Only) (1)	WD04SD	S: 06/18/2008 14:22	--
MJ97B8	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254133 (Ice Only) (1)	WD05SD	S: 06/18/2008 15:22	--
MJ97B9	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254134 (Ice Only) (1)	WD06SD	S: 06/18/2008 15:44	--
MJ97C0	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254135 (Ice Only) (1)	WD07SD	S: 06/19/2008 08:59	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			
Analysis Key:	**Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium	**Type/Designate :** Composite = C, Grab = G, Both = B	**Shipment Iced?**

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Reference Case: 37589
Client No:

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Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1949	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ97C1	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254136 (Ice Only) (1)	WD08SD [1]	S: 06/19/2008 10:08	--
MJ97C2	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254137 (Ice Only) (1)	WD09SD	S: 06/19/2008 11:18	--
MJ97C3	Sediment/ Bryan Ciecko	G	TM/Hg (21)	08254138 (Ice Only) (1)	WD10SD	S: 06/19/2008 13:34	--
MJ97C4	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254139 (Ice Only) (1)	GG02SW	S: 06/19/2008 08:16	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1639	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ96Y5	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254000 (HNO3) (1)	BG01SW	S: 06/16/2008 11:00	--
MJ96Y6	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254001 (HNO3) (1)	BG02SW	S: 06/16/2008 11:35	--
MJ96Y7	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254002 (HNO3) (1)	BG03SW	S: 06/16/2008 10:40	--
MJ96Y8	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254003 (HNO3) (1)	BG04SW	S: 06/16/2008 09:40	--
MJ96Y9	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254004 (HNO3) (1)	BR01SW	S: 06/16/2008 15:40	--
MJ96Z0	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254005 (HNO3) (1)	BR02SW	S: 06/16/2008 12:40	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ96Y5, MJ96Y6, MJ96Y7, MJ96Y8		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

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USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1639	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9719	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254034 (HNO3) (1)	BR31SW	S: 06/16/2008 17:40	--
MJ9720	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254035 (HNO3) (1)	BR32SW	S: 06/16/2008 16:45	--
MJ9721	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254036 (HNO3) (1)	BR33SW	S: 06/16/2008 15:50	--
MJ9722	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254037 (HNO3) (1)	BR34SW	S: 06/16/2008 15:10	--
MJ9723	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254038 (HNO3) (1)	BR35SW	S: 06/16/2008 14:25	--
MJ9729	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254044 (HNO3) (1)	EC01SW	S: 06/16/2008 17:20	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ96Y5, MJ96Y6, MJ96Y7, MJ96Y8		

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Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1639		
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854		
Spill ID:	NA				
Site Name / City/State:	Big Wood River Blaine County, ID				
Project Leader:	Renee Nordeen				
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

Relinquished By	(Date/Time)	Received By	(Date/Time)
1			
2			
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INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9741	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254056 (HNO3) (1)	TC01SW	S: 06/16/2008 15:25	--
MJ9742	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254057 (HNO3) (1)	TG01SW	S: 06/16/2008 11:18	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N	MJ96Y5, MJ96Y6, MJ96Y7, MJ96Y8		

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?**

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Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1629	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ96Z1	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254006 (HNO3) (1)	BR03SW	S: 06/17/2008 09:50	--
MJ96Z2	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254007 (HNO3) (1)	BR04SW	S: 06/17/2008 10:23	--
MJ96Z3	Surface Water/ Bryan Ciecko		TM/Hg (21)	08254008 (HNO3) (1)	BR05SW	S: 06/17/2008 13:10	--
MJ96Z4	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254009 (HNO3) (1)	BR06SW	S: 06/17/2008 13:50	--
MJ96Z5	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254010 (HNO3) (1)	BR07SW	S: 06/17/2008 17:30	--
MJ96Z6	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254011 (HNO3) (1)	BR08SW	S: 06/17/2008 18:00	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
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Reference Case: 37589
Client No:

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Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1629	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9713	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254028 (HNO3) (1)	BR25SW	S: 06/17/2008 16:30	--
MJ9714	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254029 (HNO3) (1)	BR26SW	S: 06/17/2008 15:50	--
MJ9715	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254030 (HNO3) (1)	BR27SW	S: 06/17/2008 11:00	--
MJ9716	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254031 (HNO3) (1)	BR28SW	S: 06/17/2008 10:00	--
MJ9717	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254032 (HNO3) (1)	BR29SW	S: 06/17/2008 08:58	--
MJ9718	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254033 (HNO3) (1)	BR30SW	S: 06/17/2008 08:12	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			
Analysis Key:	**Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium	**Type/Designate :** Composite = C, Grab = G, Both = B	**Shipment Iced?**

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Reference Case: 37589
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Region:	10	Date Shipped:	6/18/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1629	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9727	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254042 (HNO3) (1)	CC01SW	S: 06/17/2008 13:40	--
MJ9728	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254043 (HNO3) (1)	DC01SW	S: 06/17/2008 17:44	--
MJ9730	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254045 (HNO3) (1)	ER01SW	S: 06/17/2008 08:40	--
MJ9743	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254058 (HNO3) (1)	WC01SW	S: 06/16/2008 13:55	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

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Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:			
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854		
Spill ID:	NA				
Site Name / City/State:	Big Wood River Blaine County, ID				
Project Leader:	Renee Nordeen				
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

Relinquished By	(Date/Time)	Received By	(Date/Time)
1			
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INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9708	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254023 (HNO3) (1)	BR20SW	S: 06/18/2008 11:20	--
MJ9709	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254024 (HNO3) (1)	BR21SW	S: 06/18/2008 11:05	--
MJ9710	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254025 (HNO3) (1)	BR22SW	S: 06/18/2008 09:58	--
MJ9711	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254026 (HNO3) (1)	BR23SW	S: 06/18/2008 09:00	--
MJ9712	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254027 (HNO3) (1)	BR24SW	S: 06/18/2008 08:20	--
MJ9731	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254046 (HNO3) (1)	GG01SW	S: 06/17/2008 10:10	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0002

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:		Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9732	Surface Water/ Andy Maguire	G	TM/Hg (21)	08254047 (HNO3) (1)	EC02SW	S: 06/18/2008 14:35	--
MJ9733	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254048 (HNO3) (1)	IC01SW	S: 06/18/2008 14:14	--
MJ9734	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254049 (HNO3) (1)	LG01SW	S: 06/18/2008 10:45	--
MJ9737	Surface Water/ Josh Hancock	G	TM/Hg (21)	08254052 (HNO3) (1)	RC01SW	S: 06/18/2008 15:10	--
MJ9744	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254059 (HNO3) (1)	WD01SW	S: 06/18/2008 09:34	--
MJ9745	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254060 (HNO3) (1)	WD02SW	S: 06/18/2008 10:27	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0002

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:		Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9746	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254061 (HNO3) (1)	WD03SW	S: 06/18/2008 11:52	--
MJ9747	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254062 (HNO3) (1)	WD04SW	S: 06/18/2008 14:20	--
MJ97C5	Surface Water/ Bryan Ciecko		TM/Hg (21)	08254140 (HNO3) (1)	CG01SW	S: 06/17/2008 09:30	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0002

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Reference Case: 37589
Client No:

R

Region:	10	Date Shipped:	6/19/2008	**Chain of Custody Record**	Sampler Signature:
Project Code:	TEC-925A	Carrier Name:	FedEx		
Account Code:		Airbill:	8656 1348 1949	Relinquished By (Date/Time)	Received By (Date/Time)
CERCLIS ID:		Shipped to:	Bonner Analytical Testing Co. 2703 Oak Grove Road Hattiesburg MS 39402 6012642854	1	
Spill ID:	NA			2	
Site Name / City/State:	Big Wood River Blaine County, ID			3	
Project Leader:	Renee Nordeen			4	
Action:	Listing Site Inspection				
Sampling Co:	Ecology and Environment, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/Bottles	SAMPLING LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
MJ9748	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254063 (HNO3) (1)	WD05SW	S: 06/18/2008 15:20	--
MJ9749	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254064 (HNO3) (1)	WD06SW	S: 06/18/2008 15:42	--
MJ9750	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254065 (HNO3) (1)	WD07SW	S: 06/19/2008 08:57	--
MJ9751	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254066 (HNO3) (1)	WD08SW	S: 06/19/2008 10:06	--
MJ9752	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254067 (HNO3) (1)	WD09SW	S: 06/19/2008 11:16	--
MJ9753	Surface Water/ Bryan Ciecko	G	TM/Hg (21)	08254068 (HNO3) (1)	WD10SW	S: 06/19/2008 13:32	--

Shipment for Case Complete?	Sample (s) to be used for laboratory QC:	Additional Sampler Signature (s):	Chain Of Custody Seal Number :
N			

Analysis Key: **Concentration :** L = Low, M = Medium, H = High, L/M = Low/Medium **Type/Designate :** Composite = C, Grab = G, Both = B **Shipment Iced?** _____

TM/Hg = CLP TAL Total Metals and Mercury

COC Number : 10-4097213-061908-0003

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F Data Validation Memoranda

ecology and environment, inc.
International Specialists in the Environment
720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 24, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 20 water samples collected from the Big Wood River site located in Blaine County, Idaho, has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ97Y5	MJ97Y6	MJ97Y7	MJ97Y8	MJ97Y9
MJ97Z0	MJ97Z1	MJ97Z2	MJ97Z3	MJ97Z4
MJ97Z5	MJ97Z6	MJ9713	MJ9714	MJ9715
MJ9716	MJ9717	MJ9718	MJ9719	MJ9720

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

July 23, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ97Y5, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Twenty (20) water samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ97Y5	MJ97Y6	MJ97Y7	MJ97Y8	MJ97Y9	MJ97Z0	MJ97Z1
MJ97Z2	MJ97Z3	MJ97Z4	MJ97Z5	MJ97Z6	MJ9713	MJ9714
MJ9715	MJ9716	MJ9717	MJ9718	MJ9719	MJ9720	

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/16/08 and 6/17/08. ICP-AES analysis was conducted on 6/27/08 and 6/30/08. Mercury analysis was conducted on 7/1/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (94-106%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (93-100%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries (95-104%) for the LCS were within the established control limits (80-120%) for aqueous samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of copper, iron, mercury, vanadium and zinc. Affected samples were qualified (U).

MATRIX SPIKE ANALYSIS - Acceptable

A matrix spike analysis was performed for sample MJ97Y5. Percent recoveries (84-106%) were within the recovery criterion (75-125%).

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ97Y5. Relative percent differences ($\pm$ CRDL) were within the acceptance criteria ($\leq$ 20%; $\pm$ CRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION - Acceptable

A five-fold serial dilution was performed for sample MJ97Y5. Percent differences ($\leq$ 7%) were within the criterion ($\leq$ 10%) for the serial dilution analysis.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

Copper, iron, mercury, vanadium and zinc data were qualified (U) due to the detected presence of these elements in the instrument and/or preparation blanks.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

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1A-IN

INORGANIC ANALYSIS DATA SHEET

14

EPA SAMPLE NO.

MJ96Y5

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-01

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	256			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	17.9	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	24600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.5	J	U	P
7439-89-6	Iron	227			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	3360	J	Q	P
7439-96-5	Manganese	6.8	J	Q	P
7439-97-6	Mercury	0.10	J	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	394	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	1810	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.40	J	U	P
7440-66-6	Zinc	60.0	U		P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

15

EPA SAMPLE NO.

MJ96Y6

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-02

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	174	J	Q	P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	16.2	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	23500			P
7440-47-3	Chromium	0.52	J	Q	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.9	J	U	P
7439-89-6	Iron	137		U	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	3180	J	Q	P
7439-96-5	Manganese	5.5	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	353	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	1720	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.72	J	U	P
7440-66-6	Zinc	60.0	U		P

DF 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

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Comments:

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1A-IN

INORGANIC ANALYSIS DATA SHEET

16

EPA SAMPLE NO.

MJ96Y7

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-03

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	40.1	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	97100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	27.5	J	U	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	53100			P
7439-96-5	Manganese	2.5	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	2380	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6030			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.6	J	U	P
7440-66-6	Zinc	1.8	J	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

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Comments:

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1A-IN

INORGANIC ANALYSIS DATA SHEET

17

EPA SAMPLE NO.

MJ96Y8

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-04

Level (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	76.4	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	91500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	62.6	J	u	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	50800			P
7439-96-5	Manganese	4.1	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.8	J	Q	P
7440-09-7	Potassium	952	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	3460	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	13.8	J	u	P

7-23-08

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Comments:

USEPA - CLP

1A-IN

18

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Y9

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-05

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	230			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	30.7	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	32200			P
7440-47-3	Chromium	0.60	J	Q	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	37.5		u	P
7439-89-6	Iron	214			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	6280			P
7439-96-5	Manganese	8.2	J	Q	P
7439-97-6	Mercury	0.054	~~J~~	u	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	742	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2920	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.80	~~J~~	u	P
7440-66-6	Zinc	12.3	~~J~~	u	P

7-23-08

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Comments:

USEPA - CLP

1A-IN

19

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z0

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-06

Level (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	312			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	30.0	JQ		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	29300			P
7440-47-3	Chromium	0.38	JQ		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	307			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5800			P
7439-96-5	Manganese	11.0	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	707	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2730	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.2	~~J~~	U	P
7440-66-6	Zinc	5.5	~~J~~	U	P

BW 7-23-08

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

20

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z1

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-07

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	393			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	30.5	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	28300			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	24.4	J	U	P
7439-89-6	Iron	383			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5530			P
7439-96-5	Manganese	13.2	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	792	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2400	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.2	J	U	P
7440-66-6	Zinc	23.1	J	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z2

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-08

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	322			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.3	JQ		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	3.3	J	U	P
7439-89-6	Iron	306			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5330			P
7439-96-5	Manganese	11.2	JQ		P
7439-97-6	Mercury	0.15	J	U	CV
7440-02-0	Nickel	1.9	JQ		P
7440-09-7	Potassium	677	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2300	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.77	J	U	P
7440-66-6	Zinc	6.4	J	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z3

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-09

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	316			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.2	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	28600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	2.0	J	U	P
7439-89-6	Iron	303			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5520			P
7439-96-5	Manganese	11.7	J	Q	P
7439-97-6	Mercury	0.12	J	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	701	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2610	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.98	J	U	P
7440-66-6	Zinc	5.1	J	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z4

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-10

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	314			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	29.6	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	28800			P
7440-47-3	Chromium	0.57	J	Q	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	299			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5620			P
7439-96-5	Manganese	12.4	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	726	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2720	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.3	J	U	P
7440-66-6	Zinc	4.6	J	U	P

DM 7-23-08

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z5

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-11

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	280			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.5	JQ		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	27600			P
7440-47-3	Chromium	0.47	JQ		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	4.2	J	U	P
7439-89-6	Iron	260			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5440			P
7439-96-5	Manganese	9.3	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	680	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2410	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.1	J	U	P
7440-66-6	Zinc	5.7	J	U	P

DM 7-23-08

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ96Z6

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-12

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	117	J	Q	P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.0	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	28800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	160		u	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5300			P
7439-96-5	Manganese	27.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	651	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2500	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.61	~~J~~	u	P
7440-66-6	Zinc	2.4	~~J~~	u	P

RM 7-23-08

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Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9713

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-13

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	101	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	39.8	JQ		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	40200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	147		U	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	8200			P
7439-96-5	Manganese	6.9	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	883	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4210	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.62	J	U	P
7440-66-6	Zinc	8.6	J	U	P

DM 7-23-08

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Comments:

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1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9714

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-14

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	43.0	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	44100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	4.1	J	U	P
7439-89-6	Iron	58.3	J	U	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	9070			P
7439-96-5	Manganese	4.6	J	Q	P
7439-97-6	Mercury	0.073	J	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	923	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4900	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.30	J	U	P
7440-66-6	Zinc	10.3	J	U	P

DA 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

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Comments:

USEPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9715

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-15

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	349			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	26.9	J		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25200			P
7440-47-3	Chromium	0.35	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	5.6	~~J~~	U	P
7439-89-6	Iron	337			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5070			P
7439-96-5	Manganese	11.2	J		P
7439-97-6	Mercury	0.055	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	648	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2070	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.2	~~J~~	U	P
7440-66-6	Zinc	7.0	~~J~~	U	P

DM 7-23-08

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9716

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-16

Level (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	338			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	27.9	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26700			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	330			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5240			P
7439-96-5	Manganese	11.4	J	Q	P
7439-97-6	Mercury	0.054	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	651	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2320	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.3	~~J~~	U	P
7440-66-6	Zinc	7.3	~~J~~	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9717

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-17

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	344			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.4	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26700			P
7440-47-3	Chromium	0.45	J	Q	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	2.1	J	U	P
7439-89-6	Iron	330			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5280			P
7439-96-5	Manganese	12.1	J	Q	P
7439-97-6	Mercury	0.056	J	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	599	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2290	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.4	J	U	P
7440-66-6	Zinc	11.8	J	U	P

DM 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9718

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-18

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	361			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	28.0	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	345			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5140			P
7439-96-5	Manganese	12.0	J	Q	P
7439-97-6	Mercury	0.035	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	605	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2240	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.1	~~J~~	U	P
7440-66-6	Zinc	7.3	~~J~~	U	P

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9719

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

atrix (soil/water): WATER Lab Sample ID: 0806054-19

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	250			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	25.4	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	27200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	223			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5250			P
7439-96-5	Manganese	7.2	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	590	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2480	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.1	~~J~~	u	P
7440-66-6	Zinc	4.7	~~J~~	u	P

DH 7-23-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9720

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Matrix (soil/water): WATER Lab Sample ID: 0806054-20

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	222			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	24.7	J	Q	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26300			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	200			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5010			P
7439-96-5	Manganese	6.9	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	566	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2400	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.53	J	u	P
7440-66-6	Zinc	3.9	J	u	P

DS 7.23.08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	24.7
Antimony	206.83	60	8.1
Arsenic	189.04	10	3.5
Barium	233.53	200	0.59
Beryllium	313.11	5	0.190
Cadmium	226.50	5	0.18
Calcium	318.13	5000	33.1
Chromium	267.72	10	0.48
Cobalt	228.62	50	0.60
Copper	324.75	25	0.61
Iron	262.83	100	2.9
Lead	168.22	10	3.0
Magnesium	279.08	5000	3.2
Manganese	257.61	15	0.10
Nickel	231.60	40	1.60
Potassium	766.49	5000	2.7
Selenium	196.09	35	9.0
Silver	328.07	10	0.85
Sodium	330.24	5000	96
Thallium	190.86	25	6.2
Vanadium	292.40	50	0.56
Zinc	213.86	60	0.43

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	29.5
Antimony	206.83	60	9.5
Arsenic	189.04	10	4.8
Barium	233.53	200	0.50
Beryllium	313.11	5	0.110
Cadmium	226.50	5	0.37
Calcium	318.13	5000	45.0
Chromium	267.72	10	0.35
Cobalt	228.62	50	0.69
Copper	324.75	25	1.10
Iron	262.83	100	2.3
Lead	168.22	10	3.2
Magnesium	279.08	5000	4.6
Manganese	257.61	15	0.19
Nickel	231.60	40	1.4
Potassium	766.49	5000	11.4
Selenium	196.09	35	10.7
Silver	328.07	10	0.6
Sodium	330.24	5000	212
Thallium	190.86	25	8.5
Vanadium	292.40	50	0.29
Zinc	213.86	60	1.8

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

nstrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

reparation Method: CW1

oncentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Preparation Method: HW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBW01	06/26/2008		50
LCSW01	06/26/2008		50
MJ96Y5	06/26/2008		50
MJ96Y5D	06/26/2008		50
MJ96Y5S	06/26/2008		50
MJ96Y6	06/26/2008		50
MJ96Y7	06/26/2008		50
MJ96Y8	06/26/2008		50
MJ96Y9	06/26/2008		50
MJ96Z0	06/26/2008		50
MJ96Z1	06/26/2008		50
MJ96Z2	06/26/2008		50
MJ96Z3	06/26/2008		50
MJ96Z4	06/26/2008		50
MJ96Z5	06/26/2008		50
MJ96Z6	06/26/2008		50
MJ9713	06/26/2008		50
MJ9714	06/26/2008		50
MJ9715	06/26/2008		50
MJ9716	06/26/2008		50
MJ9717	06/26/2008		50
MJ9718	06/26/2008		50
MJ9719	06/26/2008		50
MJ9720	06/26/2008		50

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12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

reparation Method: CW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	06/30/2008		50
S0.2	06/30/2008		50
S0.5	06/30/2008		50
S1	06/30/2008		50
S2	06/30/2008		50
S6	06/30/2008		50
ICV01	06/30/2008		50
ICB01	06/30/2008		50
CRI01	06/30/2008		50
CCV01	06/30/2008		50
CCB01	06/30/2008		50
PBW01	06/30/2008		50
MJ96Y5	06/30/2008		50
MJ96Y5D	06/30/2008		50
MJ96Y5S	06/30/2008		50
MJ96Y6	06/30/2008		50
MJ96Y7	06/30/2008		50
MJ96Y8	06/30/2008		50
MJ96Y9	06/30/2008		50
MJ96Z0	06/30/2008		50
MJ96Z1	06/30/2008		50
CCV02	06/30/2008		50
CCB02	06/30/2008		50
MJ96Z2	06/30/2008		50
MJ96Z3	06/30/2008		50
MJ96Z4	06/30/2008		50
MJ96Z5	06/30/2008		50
MJ96Z6	06/30/2008		50
MJ9713	06/30/2008		50
MJ9714	06/30/2008		50
MJ9715	06/30/2008		50
CRI02	06/30/2008		50
CCV03	06/30/2008		50
CCB03	06/30/2008		50
MJ9716	06/30/2008		50
MJ9717	06/30/2008		50
MJ9718	06/30/2008		50
MJ9719	06/30/2008		50
MJ9720	06/30/2008		50

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ96Y5

Preparation Method: CW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CRI03	06/30/2008		50
CCV04	06/30/2008		50
CCB04	06/30/2008		50

ecology and environment, inc.
International Specialists in the Environment
720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 24, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 20 water samples collected from the Big Wood River site located in Blaine County, Idaho, has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ9708	MJ9709	MJ9710	MJ9711	MJ9712
MJ9721	MJ9722	MJ9723	MJ9727	MJ9728
MJ9729	MJ9730	MJ9731	MJ9732	MJ9733
MJ9734	MJ9737	MJ9741	MJ9742	MJ9743

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

July 22, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ9721, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Twenty (20) water samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ9708	MJ9709	MJ9710	MJ9711	MJ9712	MJ9721	MJ9722
MJ9723	MJ9727	MJ9728	MJ9729	MJ9730	MJ9731	MJ9732
MJ9733	MJ9734	MJ9737	MJ9741	MJ9742	MJ9743	

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/16/08 through 6/18/08. ICP-AES analysis was conducted on 7/8/08 and 7/10/08. Mercury analysis was conducted on 7/1/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (90-109%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (92-106%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries (92-98%) for the LCS were within the established control limits (80-120%) for aqueous samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of mercury. Affected samples were qualified (U).

MATRIX SPIKE ANALYSIS - Acceptable

A matrix spike analysis was performed for sample MJ9721. Percent recoveries (87-108%) were within the recovery criterion (75-125%).

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ9721. Relative percent differences ($\leq$ 14%) were within the acceptance criteria ($\leq$ 20%; $\pm$ CRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION - Acceptable

A five-fold serial dilution was performed for sample MJ9721. Percent differences ($\leq$ 6%) were within the criterion ($\leq$ 10%) for the serial dilution analysis. Barium and iron were qualified (E) by the lab, however, indigenous concentrations were below the serial dilution evaluation criteria (> 50x MDL) for these analytes. The (E) qualifier was removed.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

Mercury data were qualified (U) due to the detected presence of this element in the instrument and/or preparation blanks.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

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1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9708

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

latrix (soil/water): WATER Lab Sample ID: 0806067-11

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	35.6	J	~~E~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	43200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	12.2	J	~~E~~	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	8020			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.070	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	851	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4490	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.86	J		P
7440-66-6	Zinc	7.1	J		P

7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9709

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-12

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	35.9	J Q	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	43600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	12.4	J Q	E	P
7439-92-1	Lead	4.9	J Q		P
7439-95-4	Magnesium	8170			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.11	B	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	884	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4580	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	8.3	J Q		P

7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

18

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9710

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-13

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	460			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	29.5	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	26600			P
7440-47-3	Chromium	0.93	JQ		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	454		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5230			P
7439-96-5	Manganese	14.0	JQ		P
7439-97-6	Mercury	0.072	U	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	706	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2080	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.6	JQ		P
7440-66-6	Zinc	6.3	JQ		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9711

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-14

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	37.4	J Q		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	29.2	J Q	~~E~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	34800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	66.5	J Q	~~E~~	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	6710			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.16	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	790	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	3500	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.86	J Q		P
7440-66-6	Zinc	3.0	J Q		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9712

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

atrix (soil/water): WATER Lab Sample ID: 0806067-15

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	119	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	25.2	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	28700			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	133		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5620			P
7439-96-5	Manganese	5.3	JQ		P
7439-97-6	Mercury	0.19	J	u	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	685	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2800	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.85	JQ		P
7440-66-6	Zinc	3.4	JQ		P

DS 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

21

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9721

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-01

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	201			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	22.2	JQ	~~E~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	206		~~E~~	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5040			P
7439-96-5	Manganese	6.1	JQ		P
7439-97-6	Mercury	0.039	~~J~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	577	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2190	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	2.9	JQ		P

DH 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

22

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9722

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

atrix (soil/water): WATER Lab Sample ID: 0806067-02

evel (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	176	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	15.4	J	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	23700			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	180		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	3280	J		P
7439-96-5	Manganese	6.6	J		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	451	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2180	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	1.5	J		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

23

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9723

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-03

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	156	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	14.9	J		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	140			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	3320	J		P
7439-96-5	Manganese	5.0	J		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	399	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	1740	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

24

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9727

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-04

Level (low/med): LOW Date Received: 06/19/2008

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	116	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	29.5	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	53200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	321		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	8630			P
7439-96-5	Manganese	64.3			P
7439-97-6	Mercury	0.10	J	U	CV
7440-02-0	Nickel	0.79	JQ		P
7440-09-7	Potassium	1250	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	8410			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	2.1	JQ		P
7440-66-6	Zinc	15.2	JQ		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9728

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-05

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	30.3	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	43200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	100	U	E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	4640	JQ		P
7439-96-5	Manganese	6.9	JQ		P
7439-97-6	Mercury	0.094	I	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	838	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4140	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

26

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9729

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-06

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	87.3	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	27.5	J	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	48700			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	0.90	J		P
7439-89-6	Iron	88.1	J	E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	16400			P
7439-96-5	Manganese	5.7	J		P
7439-97-6	Mercury	0.11	B	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1470	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6370			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.3	J		P
7440-66-6	Zinc	0.95	J		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

27

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9730

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-07

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	422			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	25.6	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	19500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.1	JQ		P
7439-89-6	Iron	1040		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5260			P
7439-96-5	Manganese	17.9			P
7439-97-6	Mercury	0.089	J	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1080	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	853	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	12.8	JQ		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9731

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-16

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38.1	J	Q	P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	47.4	J	Q E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	35800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	69.1	J	Q E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	10800			P
7439-96-5	Manganese	38.5			P
7439-97-6	Mercury	0.050	U	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1070	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	5180			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	0.89	J	Q	P

RM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

29

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9732

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-17

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.6	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	35.0	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	74000			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.8	JQ		P
7439-89-6	Iron	46.2	JQ	E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	29800			P
7439-96-5	Manganese	6.8	JQ		P
7439-97-6	Mercury	0.043	U	U	CV
7440-02-0	Nickel	3.7	JQ		P
7440-09-7	Potassium	2640	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	9570			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.8	JQ		P
7440-66-6	Zinc	0.90	JQ		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

30

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9733

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

atrix (soil/water): WATER Lab Sample ID: 0806067-18

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	934			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	50.3	J	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	0.43	J		P
7440-70-2	Calcium	96800			P
7440-47-3	Chromium	2.9	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	944		E	P
7439-92-1	Lead	30.2			P
7439-95-4	Magnesium	17600			P
7439-96-5	Manganese	31.6			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.3	J		P
7440-09-7	Potassium	2380	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6220			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	4.0	J		P
7440-66-6	Zinc	20.4	J		P

RM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9734

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-19

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.0	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	43.3	J	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	39000			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	138		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	13800			P
7439-96-5	Manganese	28.2			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	4160	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	5470			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	3.1	J		P
7440-66-6	Zinc	0.73	J		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9737

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-20

Level (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	15.0	J	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	34500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	100	U	E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	19000			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1350	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2360	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P

DM 7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

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Comments:

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9741

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-08

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	273			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	50.3	JQ	E	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	32900			P
7440-47-3	Chromium	0.68	JQ		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	374		E	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	11900			P
7439-96-5	Manganese	8.5	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.3	JQ		P
7440-09-7	Potassium	922	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	828	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	2.0	JQ		P
7440-66-6	Zinc	8.0	JQ		P

DS 7-22-08

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Comments:

USEPA - CLP

1A-IN

34

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9742

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-09

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	49.5	J	~~B~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	45100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	56.5	J	~~B~~	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	16300			P
7439-96-5	Manganese	7.6	J		P
7439-97-6	Mercury	0.042	~~J~~	u	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	4160	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6030			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	2.2	J		P
7440-66-6	Zinc	60.0	U		P

DM 7-22-08

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9743

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Matrix (soil/water): WATER Lab Sample ID: 0806067-10

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	533			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	17.0	J	~~E~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	19100			P
7440-47-3	Chromium	0.69	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	406		~~E~~	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	2610	J		P
7439-96-5	Manganese	14.9	J		P
7439-97-6	Mercury	0.098	~~B~~	U	CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	666	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4080	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.8	J		P
7440-66-6	Zinc	18.1	J		P

7-22-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	14.9
Antimony	206.83	60	7.5
Arsenic	189.04	10	4.9
Barium	233.53	200	0.61
Beryllium	313.11	5	0.030
Cadmium	226.50	5	0.22
Calcium	318.13	5000	18.4
Chromium	267.72	10	0.48
Cobalt	228.62	50	0.77
Copper	324.75	25	0.6
Iron	262.83	100	5.2
Lead	168.22	10	4.9
Magnesium	279.08	5000	7.7
Manganese	257.61	15	0.50
Nickel	231.60	40	1.41
Potassium	766.49	5000	5.6
Selenium	196.09	35	4.1
Silver	328.07	10	1.6
Sodium	330.24	5000	176
Thallium	190.86	25	4.0
Vanadium	292.40	50	0.8
Zinc	213.86	60	0.58

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: HW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	11.7
Antimony	206.83	60	10.7
Arsenic	189.04	10	3.7
Barium	233.53	200	0.40
Beryllium	313.11	5	0.050
Cadmium	226.50	5	0.28
Calcium	318.13	5000	9.0
Chromium	267.72	10	0.55
Cobalt	228.62	50	0.71
Copper	324.75	25	0.7
Iron	262.83	100	2.2
Lead	168.22	10	4.2
Magnesium	279.08	5000	3.6
Manganese	257.61	15	4.08
Nickel	231.60	40	0.57
Potassium	766.49	5000	3.3
Selenium	196.09	35	15.8
Silver	328.07	10	1.0
Sodium	330.24	5000	130
Thallium	190.86	25	2.2
Vanadium	292.40	50	0.66
Zinc	213.86	60	0.7

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

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PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Preparation Method: HW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBW01	07/07/2008		50
LCSW01	07/07/2008		50
MJ9721	07/07/2008		50
MJ9721D	07/07/2008		50
MJ9721S	07/07/2008		50
MJ9722	07/07/2008		50
MJ9723	07/07/2008		50
MJ9727	07/07/2008		50
MJ9728	07/07/2008		50
MJ9729	07/07/2008		50
MJ9730	07/07/2008		50
MJ9741	07/07/2008		50
MJ9742	07/07/2008		50
MJ9743	07/07/2008		50
MJ9708	07/07/2008		50
MJ9709	07/07/2008		50
MJ9710	07/07/2008		50
MJ9711	07/07/2008		50
MJ9712	07/07/2008		50
MJ9731	07/07/2008		50
MJ9732	07/07/2008		50
MJ9733	07/07/2008		50
MJ9734	07/07/2008		50
MJ9737	07/07/2008		50

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PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

reparation Method: CW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	06/30/2008		50
S0.2	06/30/2008		50
S0.5	06/30/2008		50
S1	06/30/2008		50
S2	06/30/2008		50
S6	06/30/2008		50
ICV01	06/30/2008		50
ICB01	06/30/2008		50
CRI01	06/30/2008		50
CRI02	06/30/2008		50
CCV01	06/30/2008		50
CCB01	06/30/2008		50
PBW01	06/30/2008		50
MJ9708	06/30/2008		50
MJ9709	06/30/2008		50
MJ9710	06/30/2008		50
MJ9711	06/30/2008		50
MJ9712	06/30/2008		50
MJ9721	06/30/2008		50
MJ9721D	06/30/2008		50
MJ9721S	06/30/2008		50
MJ9722	06/30/2008		50
CCV02	06/30/2008		50
CCB02	06/30/2008		50
MJ9723	06/30/2008		50
MJ9727	06/30/2008		50
MJ9728	06/30/2008		50
MJ9729	06/30/2008		50
MJ9730	06/30/2008		50
MJ9731	06/30/2008		50
MJ9732	06/30/2008		50
MJ9733	06/30/2008		50
CRI03	06/30/2008		50
CCV03	06/30/2008		50
CCB03	06/30/2008		50
MJ9734	06/30/2008		50
MJ9737	06/30/2008		50
MJ9741	06/30/2008		50
MJ9742	06/30/2008		50

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9721

Preparation Method: CW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
MJ9743	06/30/2008		50
CRI04	06/30/2008		50
CCV04	06/30/2008		50
CCB04	06/30/2008		50

ecology and environment, inc.
International Specialists in the Environment
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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 23, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 12 water samples collected from the Big Wood River site located in Blaine County, Idaho has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ9744	MJ9745	MJ9746	MJ9747	MJ9748
MJ9749	MJ9750	MJ9751	MJ9752	MJ9753
MJ97C4	MJ97C5			

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits (CRQLs) when applicable. The secondary reviewer changed high (H) or low (L) bias qualifiers (added by the primary reviewer to estimated results less than the CRQL) to "Q" qualifiers when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

July 14, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ9744, Inorganic Analyses

FROM: Donald Matheny, Chemist DM
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Twelve (12) water samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ9744	MJ9745	MJ9746	MJ9747	MJ9748	MJ9749
MJ9750	MJ9751	MJ9752	MJ9753	MJ97C4	MJ97C5

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/17/08 through 6/19/08. ICP-AES analysis was conducted on 7/10/08. Mercury analysis was conducted on 7/7/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (94-106%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (89-105%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries (96-109%) for the LCS were within the established control limits (80-120%) for aqueous samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of chromium and copper. Affected samples were qualified (U) for these elements.

MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ9744. Percent recoveries (92-109%) were within the recovery criterion (75-125%) with the exception of arsenic (67%). Arsenic data were qualified (JL or UJL) and may be biased low.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ9744. Relative percent differences (2%) were within the acceptance criteria ($\leq$ 20%; $\pm$ CRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION

A five-fold serial dilution was performed for sample MJ9744. Percent differences ($\leq$ 3%) were within the criterion ($\leq$ 10%) for the serial dilution analysis with the exception of barium (22%). Barium data were qualified (JH) and may be biased high.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

Chromium and copper data were qualified (U) due to the detected presence of these elements in the instrument and/or preparation blanks.

Arsenic data were qualified (JL or UJL) due to a low recovery for the matrix spike. Arsenic data may be biased low.

Barium data were qualified (JH) due to a high percent difference in the serial dilution analysis with an indication of high bias.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

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1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9744

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-01

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	416			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	* UJL	P
7440-39-3	Barium	31.9	J	JQ B JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	27800			P
7440-47-3	Chromium	1.4	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	3.1	J	U	P
7439-89-6	Iron	370			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5600			P
7439-96-5	Manganese	17.6			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.8	JQ		P
7440-09-7	Potassium	765	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2460	JQ		P
7440-28-0	Thallium	2.6	JQ		P
7440-62-2	Vanadium	0.90	JQ		P
7440-66-6	Zinc	17.5	JQ		P

DM 7-14-08

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Comments:

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INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9745

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Matrix (soil/water): WATER Lab Sample ID: 0806068-02

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	45.8	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	* UJL	P
7440-39-3	Barium	42.7	J	JQ * JHW	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	48800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.0	J	U	P
7439-89-6	Iron	23.2	J		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	9430			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	882	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	5540			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	4.5	J		P

DM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9746

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-03

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	105	J	Q	P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U	NUJL	P
7440-39-3	Barium	25.2	J	JQ B JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	27100			P
7440-47-3	Chromium	1.0	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	92.1	J	Q	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5310			P
7439-96-5	Manganese	8.8	J	Q	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	646	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2230	J	Q	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.3	J	Q	P
7440-66-6	Zinc	4.5	J	Q	P

DM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

17

EPA SAMPLE NO.

MJ9747

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Matrix (soil/water): WATER Lab Sample ID: 0806068-04

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	433			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	# UJL	P
7440-39-3	Barium	30.1	J	JQ E JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	27900			P
7440-47-3	Chromium	1.3	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	355			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5540			P
7439-96-5	Manganese	11.5	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	733	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2550	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.99	JQ		P
7440-66-6	Zinc	6.1	JQ		P

RM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9748

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-05

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	145	J Q		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	* UJL	P
7440-39-3	Barium	24.9	J	JQ ~~J~~	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25700			P
7440-47-3	Chromium	0.57	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.5	J	U	P
7439-89-6	Iron	139			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5080			P
7439-96-5	Manganese	12.2	J Q		P
7439-97-6	Mercury	0.034	J Q		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	624	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2210	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	0.88	J Q		P
7440-66-6	Zinc	6.7	J Q		P

DM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9749

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Matrix (soil/water): WATER Lab Sample ID: 0806068-06

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12.2	J	Q	P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	~~U~~	~~N~~ UJL	P
7440-39-3	Barium	40.0	~~J~~	JQ ~~E~~ J MW	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	46800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	26.0	J	Q	P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	11700			P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	895	J	Q	P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	5520			P
7440-28-0	Thallium	4.0	J	Q	P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P

DV 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

20

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9750

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-07

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	17.2	J Q		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	J UJL	P
7440-39-3	Barium	25.0	J	JQ J JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	29200			P
7440-47-3	Chromium	1.3	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	0.88	J	U	P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	6120			P
7439-96-5	Manganese	4.4	J Q		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	337	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	3020	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	2.5	J Q		P

DH 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

21

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9751

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Matrix (soil/water): WATER Lab Sample ID: 0806068-08

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21.7	J Q		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	~~J~~	~~J~~ UJL	P
7440-39-3	Barium	42.0	~~J~~	JQ ~~E J~~ HM	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	42900			P
7440-47-3	Chromium	1.4	~~J~~	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	26.7	J Q		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	9170			P
7439-96-5	Manganese	17.6			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	778	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4750	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	10.0	J Q		P

7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

22

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9752

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-09

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	75.8	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	UJL	P
7440-39-3	Barium	14.9	J	JQ B FMW	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	23800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	1.7	J	U	P
7439-89-6	Iron	55.8	JQ		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	3200	JQ		P
7439-96-5	Manganese	5.3	JQ		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	385	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	2060	JQ		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.3	JQ		P
7440-66-6	Zinc	2.0	JQ		P

7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

23

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9753

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

latrix (soil/water): WATER Lab Sample ID: 0806068-10

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	22.2	JQ		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U	N UJL	P
7440-39-3	Barium	57.5	J	JQ & JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	48500			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	348			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	9740			P
7439-96-5	Manganese	109			P
7439-97-6	Mercury	0.057	JQ		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1090	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6030			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	1.6	JQ		P

RM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

24

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C4

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

atrix (soil/water): WATER Lab Sample ID: 0806068-11

evel (low/med): LOW Date Received: 06/20/2008

Solids: 0.0

oncentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	144	J Q		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	J	N UJL	P
7440-39-3	Barium	29.6	J	JQ E FHM	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	21000			P
7440-47-3	Chromium	0.88	J	U	P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	0.86	J	U	P
7439-89-6	Iron	132			P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	4020	J Q		P
7439-96-5	Manganese	5.5	J Q		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	1240	J Q		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	4670	J Q		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	1.6	J Q		P
7440-66-6	Zinc	2.7	J Q		P

DM 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

USEPA - CLP

1A-IN

25

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C5

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Matrix (soil/water): WATER Lab Sample ID: 0806068-12

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	728			P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	19.1		~~J~~ JL	P
7440-39-3	Barium	98.6	~~J~~	JQ ~~E~~ JH	P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	1.3	JQ		P
7440-70-2	Calcium	78700			P
7440-47-3	Chromium	1.7	~~J~~	U	P
7440-48-4	Cobalt	0.91	JQ		P
7440-50-8	Copper	11.3	JQ		P
7439-89-6	Iron	848			P
7439-92-1	Lead	5.4	JQ		P
7439-95-4	Magnesium	18000			P
7439-96-5	Manganese	123			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	7.0	JQ		P
7440-09-7	Potassium	4650	JQ		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	6610			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	6.0	JQ		P
7440-66-6	Zinc	105			P

DV 7-14-08

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 01/20/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	24.7
Antimony	206.83	60	8.1
Arsenic	189.04	10	3.5
Barium	233.53	200	0.59
Beryllium	313.11	5	0.190
Cadmium	226.50	5	0.18
Calcium	318.13	5000	33.1
Chromium	267.72	10	0.48
Cobalt	228.62	50	0.60
Copper	324.75	25	0.6
Iron	262.83	100	2.9
Lead	168.22	10	3.0
Magnesium	279.08	5000	3.2
Manganese	257.61	15	0.10
Nickel	231.60	40	1.60
Potassium	766.49	5000	2.7
Selenium	196.09	35	9.0
Silver	328.07	10	0.9
Sodium	330.24	5000	96
Thallium	190.86	25	6.2
Vanadium	292.40	50	0.6
Zinc	213.86	60	0.43

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: HW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	11.7
Antimony	206.83	60	10.7
Arsenic	189.04	10	3.7
Barium	233.53	200	0.40
Beryllium	313.11	5	0.050
Cadmium	226.50	5	0.28
Calcium	318.13	5000	9.0
Chromium	267.72	10	0.55
Cobalt	228.62	50	0.71
Copper	324.75	25	0.7
Iron	262.83	100	2.2
Lead	168.22	10	4.2
Magnesium	279.08	5000	3.6
Manganese	257.61	15	4.08
Nickel	231.60	40	0.57
Potassium	766.49	5000	3.3
Selenium	196.09	35	15.8
Silver	328.07	10	1.0
Sodium	330.24	5000	130
Thallium	190.86	25	2.2
Vanadium	292.40	50	0.66
Zinc	213.86	60	0.7

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	29.5
Antimony	206.83	60	9.5
Arsenic	189.04	10	4.8
Barium	233.53	200	0.50
Beryllium	313.11	5	0.110
Cadmium	226.50	5	0.37
Calcium	318.13	5000	45.0
Chromium	267.72	10	0.35
Cobalt	228.62	50	0.69
Copper	324.75	25	1.10
Iron	262.83	100	2.3
Lead	168.22	10	3.2
Magnesium	279.08	5000	4.6
Manganese	257.61	15	0.19
Nickel	231.60	40	1.40
Potassium	766.49	5000	11.4
Selenium	196.09	35	10.7
Silver	328.07	10	0.64
Sodium	330.24	5000	212
Thallium	190.86	25	8.5
Vanadium	292.40	50	0.29
Zinc	213.86	60	1.80

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HW1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	29.5
Antimony	206.83	60	9.5
Arsenic	189.04	10	4.8
Barium	233.53	200	0.50
Beryllium	313.11	5	0.110
Cadmium	226.50	5	0.37
Calcium	318.13	5000	45.0
Chromium	267.72	10	0.35
Cobalt	228.62	50	0.69
Copper	324.75	25	1.10
Iron	262.83	100	2.3
Lead	168.22	10	3.2
Magnesium	279.08	5000	4.6
Manganese	257.61	15	0.19
Nickel	231.60	40	1.40
Potassium	766.49	5000	11.4
Selenium	196.09	35	10.7
Silver	328.07	10	0.64
Sodium	330.24	5000	212
Thallium	190.86	25	8.5
Vanadium	292.40	50	0.29
Zinc	213.86	60	1.80

Comments:

USEPA - CLP

12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

reparation Method: HW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBW01	07/01/2008		50
LCSW01	07/01/2008		50
MJ9744	07/01/2008		50
MJ9744D	07/01/2008		50
MJ9744S	07/01/2008		50
MJ9745	07/01/2008		50
MJ9746	07/01/2008		50
MJ9747	07/01/2008		50
MJ9748	07/01/2008		50
MJ9749	07/01/2008		50
MJ9750	07/01/2008		50
MJ9751	07/01/2008		50
MJ9752	07/01/2008		50
MJ9753	07/01/2008		50
MJ97C4	07/01/2008		50
MJ97C5	07/01/2008		50

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12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9744

reparation Method: CW1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	07/07/2008		50
S0.2	07/07/2008		50
S0.5	07/07/2008		50
S1	07/07/2008		50
S2	07/07/2008		50
S6	07/07/2008		50
ICV01	07/07/2008		50
ICB01	07/07/2008		50
CRI01	07/07/2008		50
CCV01	07/07/2008		50
CCB01	07/07/2008		50
PBW01	07/07/2008		50
MJ9744	07/07/2008		50
MJ9744D	07/07/2008		50
MJ9744S	07/07/2008		50
MJ9745	07/07/2008		50
MJ9746	07/07/2008		50
MJ9747	07/07/2008		50
MJ9748	07/07/2008		50
MJ9749	07/07/2008		50
MJ9750	07/07/2008		50
CCV02	07/07/2008		50
CCB02	07/07/2008		50
MJ9751	07/07/2008		50
MJ9752	07/07/2008		50
MJ9753	07/07/2008		50
MJ97C4	07/07/2008		50
MJ97C5	07/07/2008		50
CRI02	07/07/2008		50
CCV03	07/07/2008		50
CCB03	07/07/2008		50

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MEMORANDUM

DATE: June 24, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 20 sediment samples collected from the Big Wood River site located in Blaine County, Idaho, has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ9754	MJ9778	MJ9779	MJ9780	MJ9781
MJ9782	MJ9783	MJ9784	MJ9785	MJ9786
MJ9787	MJ9788	MJ9797	MJ9798	MJ97A0
MJ97A1	MJ97A2	MJ97A3	MJ97A4	MJ97A5

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits (CRQLs) when applicable. The secondary reviewer changed high (H) or low (L) bias qualifiers (added by the primary reviewer to estimated results less than the CRQL) to "Q" qualifiers when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

July 22, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ9754, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Twenty (20) sediment samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ9754	MJ9778	MJ9779	MJ9780	MJ9781	MJ9782	MJ9783
MJ9784	MJ9785	MJ9786	MJ9787	MJ9788	MJ9797	MJ9798
MJ97A0	MJ97A1	MJ97A2	MJ97A3	MJ97A4	MJ97A5	

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/17/08 through 6/19/08. ICP-AES analysis was conducted on 6/30/08. Mercury analysis was conducted on 7/3/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (94-104%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (87-104%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries for the LCS were within the established control limits for solid samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of antimony, mercury and sodium. Affected samples were qualified (U or R) for these elements.

MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ9754. Percent recoveries (76-109%) were within the recovery criterion (75-125%) with the exception of antimony (19%), arsenic (42%), cadmium (74%) and selenium (44%). Antimony results were qualified (JL or R). Arsenic, cadmium and selenium results were qualified (UJL or JL). All qualified data may be biased low.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ9754. Relative percent differences ($\leq$ 14%) were within the acceptance criteria ($\leq$ 35%; $\pm$ 2xCRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION - Acceptable

A five-fold serial dilution was performed for sample MJ9754. Percent differences ($\leq$ 10%) were within the criterion ($\leq$ 10%) for the serial dilution analysis.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

Mercury and sodium data were qualified (U) due to the detected presence of these elements in the instrument and/or preparation blanks.

Antimony data were qualified (JL or R) due to a low recovery for the matrix spike and blank contamination. Antimony may be biased low.

Arsenic, cadmium and selenium data were qualified (JL or UJL) due to low recoveries for the matrix spike. Values for these elements may be biased low.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9754

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-01

evel (low/med): LOW Date Received: 06/20/2008

Solids: 65.3

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13700			P
7440-36-0	Antimony	9.2	J	N R	P
7440-38-2	Arsenic	7.9		N J L	P
7440-39-3	Barium	232			P
7440-41-7	Beryllium	0.97			P
7440-43-9	Cadmium	0.23	J	J Q N J L	P
7440-70-2	Calcium	6100			P
7440-47-3	Chromium	34.6			P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	17.9			P
7439-89-6	Iron	18400			P
7439-92-1	Lead	20.7			P
7439-95-4	Magnesium	4920			P
7439-96-5	Manganese	783			P
7439-97-6	Mercury	0.063	J	U	CV
7440-02-0	Nickel	19.0			P
7440-09-7	Potassium	2130			P
7782-49-2	Selenium	5.4	J	N U J L	P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	232	J	U	P
7440-28-0	Thallium	3.8	U		P
7440-62-2	Vanadium	32.9			P
7440-66-6	Zinc	66.6			P

DH 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9778

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-02

Level (low/med): LOW Date Received: 06/20/2008

Solids: 65.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8150			P
7440-36-0	Antimony	~~1.3~~	~~J~~	N R	P
7440-38-2	Arsenic	40.0		N JL	P
7440-39-3	Barium	90.6			P
7440-41-7	Beryllium	0.47	JQ		P
7440-43-9	Cadmium	0.38	~~J~~	JQ N JL	P
7440-70-2	Calcium	6870			P
7440-47-3	Chromium	39.0			P
7440-48-4	Cobalt	6.7	JQ		P
7440-50-8	Copper	12.1			P
7439-89-6	Iron	16600			P
7439-92-1	Lead	438			P
7439-95-4	Magnesium	7300			P
7439-96-5	Manganese	282			P
7439-97-6	Mercury	0.14	JQ		CV
7440-02-0	Nickel	16.9			P
7440-09-7	Potassium	2800			P
7782-49-2	Selenium	5.7	~~J~~	N UJL	P
7440-22-4	Silver	1.4	JQ		P
7440-23-5	Sodium	185	~~J~~	U	P
7440-28-0	Thallium	1.8	JQ		P
7440-62-2	Vanadium	38.7			P
7440-66-6	Zinc	333			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9779

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-03

evel (low/med): LOW Date Received: 06/20/2008

Solids: 67.7

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4900			P
7440-36-0	Antimony	11.7		N JL	P
7440-38-2	Arsenic	84.4		N JL	P
7440-39-3	Barium	85.4			P
7440-41-7	Beryllium	0.40	JQ		P
7440-43-9	Cadmium	3.4		N JL	P
7440-70-2	Calcium	5890			P
7440-47-3	Chromium	15.9			P
7440-48-4	Cobalt	3.2	JQ		P
7440-50-8	Copper	38.3			P
7439-89-6	Iron	19900			P
7439-92-1	Lead	1440			P
7439-95-4	Magnesium	5010			P
7439-96-5	Manganese	1930			P
7439-97-6	Mercury	0.35			CV
7440-02-0	Nickel	13.3			P
7440-09-7	Potassium	980			P
7782-49-2	Selenium	5.2	~~U~~	N UJL	P
7440-22-4	Silver	16.9			P
7440-23-5	Sodium	34.5	~~U~~	U	P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	25.1			P
7440-66-6	Zinc	1130			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9780

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-04

evel (low/med): LOW Date Received: 06/20/2008

Solids: 72.7

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4960			P
7440-36-0	Antimony	~~8.3~~	J	J R	P
7440-38-2	Arsenic	3.9		J JL	P
7440-39-3	Barium	106			P
7440-41-7	Beryllium	0.39	JQ		P
7440-43-9	Cadmium	0.61	J	JQ J JL	P
7440-70-2	Calcium	8400			P
7440-47-3	Chromium	14.6			P
7440-48-4	Cobalt	3.7	JQ		P
7440-50-8	Copper	7.2			P
7439-89-6	Iron	7330			P
7439-92-1	Lead	39.4			P
7439-95-4	Magnesium	3990			P
7439-96-5	Manganese	108			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	13.1			P
7440-09-7	Potassium	767			P
7782-49-2	Selenium	4.8	J	J UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	132	J	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	15.8			P
7440-66-6	Zinc	114			P

JM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

20

EPA SAMPLE NO.

MJ9781

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-05

evel (low/med): LOW Date Received: 06/20/2008

Solids: 57.8

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9110			P
7440-36-0	Antimony	12.5		N JL	P
7440-38-2	Arsenic	58.7		N JL	P
7440-39-3	Barium	128			P
7440-41-7	Beryllium	0.62	JQ		P
7440-43-9	Cadmium	4.5		N JL	P
7440-70-2	Calcium	7330			P
7440-47-3	Chromium	30.0			P
7440-48-4	Cobalt	6.8	JQ		P
7440-50-8	Copper	33.7			P
7439-89-6	Iron	18800			P
7439-92-1	Lead	735			P
7439-95-4	Magnesium	7440			P
7439-96-5	Manganese	517			P
7439-97-6	Mercury	0.22			CV
7440-02-0	Nickel	18.0			P
7440-09-7	Potassium	3990			P
7782-49-2	Selenium	6.1	U	N UJL	P
7440-22-4	Silver	9.4			P
7440-23-5	Sodium	121	U	U	P
7440-28-0	Thallium	1.8	JQ		P
7440-62-2	Vanadium	47.4			P
7440-66-6	Zinc	866			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

21

EPA SAMPLE NO.

MJ9782

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-06

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 44.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7000			P
7440-36-0	Antimony	~~13.5~~	~~B~~	~~N~~ R	P
7440-38-2	Arsenic	7.6		~~N~~ JL	P
7440-39-3	Barium	118			P
7440-41-7	Beryllium	0.57	JQ		P
7440-43-9	Cadmium	2.8		~~N~~ JL	P
7440-70-2	Calcium	6560			P
7440-47-3	Chromium	21.4			P
7440-48-4	Cobalt	4.8	JQ		P
7440-50-8	Copper	13.9			P
7439-89-6	Iron	9690			P
7439-92-1	Lead	75.7			P
7439-95-4	Magnesium	5000			P
7439-96-5	Manganese	115			P
7439-97-6	Mercury	0.10	~~B~~	U	CV
7440-02-0	Nickel	18.9			P
7440-09-7	Potassium	1080	JQ		P
7782-49-2	Selenium	7.8	~~B~~	~~N~~ UJL	P
7440-22-4	Silver	0.25	JQ		P
7440-23-5	Sodium	220	~~B~~	U	P
7440-28-0	Thallium	5.6	U		P
7440-62-2	Vanadium	25.2			P
7440-66-6	Zinc	291			P

RM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9783

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-07

evel (low/med): LOW Date Received: 06/20/2008

Solids: 33.0

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7980			P
7440-36-0	Antimony	~~18.2~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	7.4		~~N~~ JL	P
7440-39-3	Barium	133			P
7440-41-7	Beryllium	0.63	JQ		P
7440-43-9	Cadmium	4.7		~~N~~ JL	P
7440-70-2	Calcium	6770			P
7440-47-3	Chromium	25.5			P
7440-48-4	Cobalt	5.1	JQ		P
7440-50-8	Copper	18.7			P
7439-89-6	Iron	11000			P
7439-92-1	Lead	70.3			P
7439-95-4	Magnesium	5020			P
7439-96-5	Manganese	124			P
7439-97-6	Mercury	0.16	~~U~~	U	CV
7440-02-0	Nickel	21.0			P
7440-09-7	Potassium	1120	JQ		P
7782-49-2	Selenium	10.6	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	0.29	JQ		P
7440-23-5	Sodium	266	~~U~~	U	P
7440-28-0	Thallium	7.6	U		P
7440-62-2	Vanadium	25.3			P
7440-66-6	Zinc	483			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9784

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-08

Level (low/med): LOW Date Received: 06/20/2008

Solids: 57.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3490			P
7440-36-0	Antimony	10.5	U	N R	P
7440-38-2	Arsenic	5.2		N JL	P
7440-39-3	Barium	53.1			P
7440-41-7	Beryllium	0.24	JQ		P
7440-43-9	Cadmium	1.8		N JL	P
7440-70-2	Calcium	3370			P
7440-47-3	Chromium	11.4			P
7440-48-4	Cobalt	2.4	JQ		P
7440-50-8	Copper	10.8			P
7439-89-6	Iron	5570			P
7439-92-1	Lead	26.4			P
7439-95-4	Magnesium	2410			P
7439-96-5	Manganese	49.0			P
7439-97-6	Mercury	0.074	J	U	CV
7440-02-0	Nickel	11.3			P
7440-09-7	Potassium	557	JQ		P
7782-49-2	Selenium	6.1	U	N UJL	P
7440-22-4	Silver	1.7	U		P
7440-23-5	Sodium	144	J	U	P
7440-28-0	Thallium	4.4	U		P
7440-62-2	Vanadium	13.8			P
7440-66-6	Zinc	205			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER; WORMS

USEPA - CLP

1A-IN

24

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9785

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-09

evel (low/med): LOW Date Received: 06/20/2008

Solids: 64.1

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6660			P
7440-36-0	Antimony	~~9.4~~	~~U~~	N R	P
7440-38-2	Arsenic	6.5		N JL	P
7440-39-3	Barium	127			P
7440-41-7	Beryllium	0.50	JQ		P
7440-43-9	Cadmium	0.39	~~J~~	JQ N JL	P
7440-70-2	Calcium	6840			P
7440-47-3	Chromium	20.0			P
7440-48-4	Cobalt	4.7	JQ		P
7440-50-8	Copper	9.1			P
7439-89-6	Iron	11200			P
7439-92-1	Lead	28.5			P
7439-95-4	Magnesium	5240			P
7439-96-5	Manganese	190			P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	16.6			P
7440-09-7	Potassium	1070			P
7782-49-2	Selenium	5.5	~~U~~	N UJL	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	190	~~J~~	U	P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	21.2			P
7440-66-6	Zinc	112			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

25

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9786

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-10

evel (low/med): LOW Date Received: 06/20/2008

Solids: 67.4

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6370			P
7440-36-0	Antimony	~~8.9~~	~~J~~	N R	P
7440-38-2	Arsenic	4.9		N JL	P
7440-39-3	Barium	144			P
7440-41-7	Beryllium	0.51	JQ		P
7440-43-9	Cadmium	0.40	~~J~~	JQ N JL	P
7440-70-2	Calcium	6330			P
7440-47-3	Chromium	20.6			P
7440-48-4	Cobalt	4.7	JQ		P
7440-50-8	Copper	11.2			P
7439-89-6	Iron	10400			P
7439-92-1	Lead	27.6			P
7439-95-4	Magnesium	5610			P
7439-96-5	Manganese	112			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	18.4			P
7440-09-7	Potassium	965			P
7782-49-2	Selenium	5.2	~~J~~	N UJL	P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	177	~~J~~	U	P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	23.0			P
7440-66-6	Zinc	93.6			P

IM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

26

EPA SAMPLE NO.

MJ9787

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-11

Level (low/med): LOW Date Received: 06/20/2008

Solids: 71.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5340			P
7440-36-0	Antimony	~~8.4~~	~~U~~	N R	P
7440-38-2	Arsenic	5.8		N JL	P
7440-39-3	Barium	108			P
7440-41-7	Beryllium	0.46	JQ		P
7440-43-9	Cadmium	0.34	~~J~~	JQ N JL	P
7440-70-2	Calcium	4070			P
7440-47-3	Chromium	18.1			P
7440-48-4	Cobalt	4.2	JQ		P
7440-50-8	Copper	9.5			P
7439-89-6	Iron	10500			P
7439-92-1	Lead	22.4			P
7439-95-4	Magnesium	4130			P
7439-96-5	Manganese	164			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	16.8			P
7440-09-7	Potassium	830			P
7782-49-2	Selenium	4.9	~~U~~	N WJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	128	~~J~~	U	P
7440-28-0	Thallium	3.5	U		P
7440-62-2	Vanadium	20.9			P
7440-66-6	Zinc	81.3			P

RM
7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

27

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9788

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-12

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 61.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5480			P
7440-36-0	Antimony	~~9.7~~	~~U~~	* R	P
7440-38-2	Arsenic	5.5		* JL	P
7440-39-3	Barium	119			P
7440-41-7	Beryllium	0.46	JQ		P
7440-43-9	Cadmium	0.19	~~U~~	JQ * JLMW	P
7440-70-2	Calcium	5280			P
7440-47-3	Chromium	18.6			P
7440-48-4	Cobalt	4.6	JQ		P
7440-50-8	Copper	8.4			P
7439-89-6	Iron	11100			P
7439-92-1	Lead	23.9			P
7439-95-4	Magnesium	4930			P
7439-96-5	Manganese	142			P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	16.2			P
7440-09-7	Potassium	696	JQ		P
7782-49-2	Selenium	5.7	~~U~~	* UJL	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	157	~~U~~	U	P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	20.4			P
7440-66-6	Zinc	81.0			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

28

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9797

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-13

evel (low/med): LOW Date Received: 06/20/2008

Solids: 77.3

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8590			P
7440-36-0	Antimony	1.2	J	N R	P
7440-38-2	Arsenic	5.6		N JL	P
7440-39-3	Barium	134			P
7440-41-7	Beryllium	0.58	JQ		P
7440-43-9	Cadmium	0.30	J	JQ N JL	P
7440-70-2	Calcium	5350			P
7440-47-3	Chromium	24.7			P
7440-48-4	Cobalt	6.3	JQ		P
7440-50-8	Copper	9.8			P
7439-89-6	Iron	12900			P
7439-92-1	Lead	72.0			P
7439-95-4	Magnesium	5310			P
7439-96-5	Manganese	111			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	13.8			P
7440-09-7	Potassium	1480			P
7782-49-2	Selenium	4.5	J	N UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	186	J	U	P
7440-28-0	Thallium	3.2	U		P
7440-62-2	Vanadium	31.0			P
7440-66-6	Zinc	106			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

29

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9798

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-14

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 67.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4600			P
7440-36-0	Antimony	~~1.4~~	J	N R	P
7440-38-2	Arsenic	5.2		N JL	P
7440-39-3	Barium	84.1			P
7440-41-7	Beryllium	0.38	JQ		P
7440-43-9	Cadmium	0.20	J	JQ N JL	P
7440-70-2	Calcium	5170			P
7440-47-3	Chromium	14.9			P
7440-48-4	Cobalt	3.5	JQ		P
7440-50-8	Copper	8.0			P
7439-89-6	Iron	8710			P
7439-92-1	Lead	16.7			P
7439-95-4	Magnesium	3880			P
7439-96-5	Manganese	124			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	13.9			P
7440-09-7	Potassium	693	JQ		P
7782-49-2	Selenium	5.2	UJ	N UJL	P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	142	J	U	P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	17.6			P
7440-66-6	Zinc	64.6			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

30

EPA SAMPLE NO.

MJ97A0

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-15

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 61.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6430			P
7440-36-0	Antimony	~~9.8~~	~~B~~	N R	P
7440-38-2	Arsenic	7.3		N J L	P
7440-39-3	Barium	111			P
7440-41-7	Beryllium	0.44	J Q		P
7440-43-9	Cadmium	0.70	~~B~~	J Q N J L M	P
7440-70-2	Calcium	23800			P
7440-47-3	Chromium	16.4			P
7440-48-4	Cobalt	4.4	J Q		P
7440-50-8	Copper	8.9			P
7439-89-6	Iron	11400			P
7439-92-1	Lead	24.7			P
7439-95-4	Magnesium	5590			P
7439-96-5	Manganese	225			P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	17.6			P
7440-09-7	Potassium	1400			P
7782-49-2	Selenium	5.7	~~B~~	N U J L	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	146	~~B~~	U	P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	18.3			P
7440-66-6	Zinc	133			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97A1

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

latrix (soil/water): SOIL Lab Sample ID: 0806069-16

evel (low/med): LOW Date Received: 06/20/2008

Solids: 49.8

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11300			P
7440-36-0	Antimony	12.0	J	N R	P
7440-38-2	Arsenic	5.5		N JL	P
7440-39-3	Barium	220			P
7440-41-7	Beryllium	0.88	JQ		P
7440-43-9	Cadmium	0.24	J	JQ N JL	P
7440-70-2	Calcium	7810			P
7440-47-3	Chromium	31.6			P
7440-48-4	Cobalt	8.4	JQ		P
7440-50-8	Copper	19.2			P
7439-89-6	Iron	16100			P
7439-92-1	Lead	23.0			P
7439-95-4	Magnesium	4570			P
7439-96-5	Manganese	538			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	16.5			P
7440-09-7	Potassium	2040			P
7782-49-2	Selenium	7.0	J	N UJL	P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	258	J	U	P
7440-28-0	Thallium	5.0	U		P
7440-62-2	Vanadium	28.2			P
7440-66-6	Zinc	105			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ97A2

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-17

evel (low/med): LOW Date Received: 06/20/2008

Solids: 39.4

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7570			P
7440-36-0	Antimony	~~15.2~~	U	N L	P
7440-38-2	Arsenic	5.4		N JL	P
7440-39-3	Barium	177			P
7440-41-7	Beryllium	0.53	J Q		P
7440-43-9	Cadmium	1.1	U	JQ N JL	P
7440-70-2	Calcium	86200			P
7440-47-3	Chromium	22.3			P
7440-48-4	Cobalt	5.2	J Q		P
7440-50-8	Copper	51.8			P
7439-89-6	Iron	9580			P
7439-92-1	Lead	27.6			P
7439-95-4	Magnesium	5050			P
7439-96-5	Manganese	282			P
7439-97-6	Mercury	0.16	U	U	CV
7440-02-0	Nickel	17.8			P
7440-09-7	Potassium	1620			P
7782-49-2	Selenium	8.9	U	N UJL	P
7440-22-4	Silver	2.5	U		P
7440-23-5	Sodium	287	U	U	P
7440-28-0	Thallium	6.3	U		P
7440-62-2	Vanadium	22.4			P
7440-66-6	Zinc	167			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97A3

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-18

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 67.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8310			P
7440-36-0	Antimony	~~3.2~~	~~J~~	N R	P
7440-38-2	Arsenic	33.6		N JL	P
7440-39-3	Barium	208			P
7440-41-7	Beryllium	0.58	J		P
7440-43-9	Cadmium	2.0		N JL	P
7440-70-2	Calcium	8330			P
7440-47-3	Chromium	33.4			P
7440-48-4	Cobalt	8.3			P
7440-50-8	Copper	20.1			P
7439-89-6	Iron	14300			P
7439-92-1	Lead	893			P
7439-95-4	Magnesium	6460			P
7439-96-5	Manganese	304			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	32.0			P
7440-09-7	Potassium	1810			P
7782-49-2	Selenium	5.2	~~U~~	N UJL	P
7440-22-4	Silver	8.0			P
7440-23-5	Sodium	177	~~J~~	U	P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	43.3			P
7440-66-6	Zinc	181			P

JM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

34

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97A4

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

atrix (soil/water): SOIL Lab Sample ID: 0806069-19

evel (low/med): LOW Date Received: 06/20/2008

Solids: 74.3

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13800			P
7440-36-0	Antimony	~~17~~	J	N R	P
7440-38-2	Arsenic	2.2		N JL	P
7440-39-3	Barium	206			P
7440-41-7	Beryllium	0.71			P
7440-43-9	Cadmium	0.46	J	JQ N JL	P
7440-70-2	Calcium	5700			P
7440-47-3	Chromium	42.5			P
7440-48-4	Cobalt	9.9			P
7440-50-8	Copper	12.0			P
7439-89-6	Iron	22200			P
7439-92-1	Lead	16.2			P
7439-95-4	Magnesium	9290			P
7439-96-5	Manganese	511			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	14.2			P
7440-09-7	Potassium	7470			P
7782-49-2	Selenium	4.7	U	N UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	220	J	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	58.9			P
7440-66-6	Zinc	98.8			P

JM
7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

35

EPA SAMPLE NO.

MJ97A5

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Matrix (soil/water): SOIL Lab Sample ID: 0806069-20

Level (low/med): LOW Date Received: 06/20/2008

Solids: 64.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15600			P
7440-36-0	Antimony	~~9.3~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	25.9		~~N~~ JL	P
7440-39-3	Barium	190			P
7440-41-7	Beryllium	1.0			P
7440-43-9	Cadmium	3.1		~~N~~ JL	P
7440-70-2	Calcium	7690			P
7440-47-3	Chromium	36.2			P
7440-48-4	Cobalt	10.2			P
7440-50-8	Copper	27.2			P
7439-89-6	Iron	22300			P
7439-92-1	Lead	50.1			P
7439-95-4	Magnesium	8920			P
7439-96-5	Manganese	478			P
7439-97-6	Mercury	0.11	~~J~~	U	CV
7440-02-0	Nickel	36.5			P
7440-09-7	Potassium	5910			P
7782-49-2	Selenium	5.4	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	130	~~J~~	U	P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	74.3			P
7440-66-6	Zinc	243			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

nstrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

reparation Method: NP1

oncentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	24.7
Antimony	206.83	60	8.1
Arsenic	189.04	10	3.5
Barium	233.53	200	0.59
Beryllium	313.11	5	0.190
Cadmium	226.50	5	0.18
Calcium	318.13	5000	33.1
Chromium	267.72	10	0.48
Cobalt	228.62	50	0.60
Copper	324.75	25	0.61
Iron	262.83	100	2.9
Lead	168.22	10	3.0
Magnesium	279.08	5000	3.2
Manganese	257.61	15	0.10
Nickel	231.60	40	1.60
Potassium	766.49	5000	2.7
Selenium	196.09	35	9.0
Silver	328.07	10	0.85
Sodium	330.24	5000	96
Thallium	190.86	25	6.2
Vanadium	292.40	50	0.56
Zinc	213.86	60	0.43

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	20.00	2.54
Antimony	206.83	6.00	0.63
Arsenic	189.04	1.00	0.49
Barium	233.53	20.00	0.040
Beryllium	313.11	0.50	0.020
Cadmium	226.50	0.50	0.022
Calcium	318.13	500.00	5.81
Chromium	267.72	1.00	0.065
Cobalt	228.62	5.00	0.075
Copper	324.75	2.50	0.120
Iron	262.83	10.00	0.57
Lead	168.22	1.00	0.47
Magnesium	279.08	500.00	1.53
Manganese	257.61	1.50	0.008
Nickel	231.60	4.00	0.180
Potassium	766.49	500.00	0.23
Selenium	196.09	3.50	1.02
Silver	328.07	1.00	0.07
Sodium	330.24	500.00	21.9
Thallium	190.86	2.50	1.00
Vanadium	292.40	5.00	0.060
Zinc	213.86	6.00	0.140

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

ıstrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

reparation Method: HS1

ɔncentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	25.4
Antimony	206.83	60	6.3
Arsenic	189.04	10	4.90
Barium	233.53	200	0.40
Beryllium	313.11	5	0.200
Cadmium	226.50	5	0.22
Calcium	318.13	5000	58.1
Chromium	267.72	10	0.7
Cobalt	228.62	50	0.75
Copper	324.75	25	1.20
Iron	262.83	100	5.7
Lead	168.22	10	4.7
Magnesium	279.08	5000	15.3
Manganese	257.61	15	0.08
Nickel	231.60	40	1.80
Potassium	766.49	5000	2.3
Selenium	196.09	35	10.2
Silver	328.07	10	0.70
Sodium	330.24	5000	219
Thallium	190.86	25	10.0
Vanadium	292.40	50	0.60
Zinc	213.86	60	1.40

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.10	0.040

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

USEPA - CLP

12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

reparation Method: HS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBS01	06/27/2008	1.00	100
LCSS01	06/27/2008	1.00	100
MJ9754	06/27/2008	1.00	100
MJ9754D	06/27/2008	1.00	100
MJ9754S	06/27/2008	1.00	100
MJ9778	06/27/2008	1.00	100
MJ9779	06/27/2008	1.00	100
MJ9780	06/27/2008	1.00	100
MJ9781	06/27/2008	1.00	100
MJ9782	06/27/2008	1.00	100
MJ9783	06/27/2008	1.00	100
MJ9784	06/27/2008	1.00	100
MJ9785	06/27/2008	1.00	100
MJ9786	06/27/2008	1.00	100
MJ9787	06/27/2008	1.00	100
MJ9788	06/27/2008	1.00	100
MJ9797	06/27/2008	1.00	100
MJ9798	06/27/2008	1.00	100
MJ97A0	06/27/2008	1.00	100
MJ97A1	06/27/2008	1.00	100
MJ97A2	06/27/2008	1.00	100
MJ97A3	06/27/2008	1.00	100
MJ97A4	06/27/2008	1.00	100
MJ97A5	06/27/2008	1.00	100

USEPA - CLP

12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

reparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	07/03/2008		100
S0.2	07/03/2008		100
S0.5	07/03/2008		100
S1	07/03/2008		100
S2	07/03/2008		100
S6	07/03/2008		100
ICV01	07/03/2008		100
ICB01	07/03/2008		100
CRI01	07/03/2008		100
CCV01	07/03/2008		100
CCB01	07/03/2008		100
PBS01	07/03/2008	0.20	100
LCSS01	07/03/2008	0.20	100
CCV02	07/03/2008		100
CCB02	07/03/2008		100
MJ9754	07/03/2008	0.20	100
MJ9754D	07/03/2008	0.20	100
MJ9754S	07/03/2008	0.20	100
MJ9778	07/03/2008	0.20	100
CRI02	07/03/2008		100
CCV03	07/03/2008		100
CCB03	07/03/2008		100
MJ9779	07/03/2008	0.20	100
MJ9780	07/03/2008	0.20	100
MJ9781	07/03/2008	0.20	100
MJ9782	07/03/2008	0.20	100
MJ9783	07/03/2008	0.20	100
MJ9784	07/03/2008	0.20	100
MJ9785	07/03/2008	0.20	100
MJ9786	07/03/2008	0.20	100
MJ9787	07/03/2008	0.20	100
MJ9788	07/03/2008	0.20	100
CCV04	07/03/2008		100
CCB04	07/03/2008		100
MJ9797	07/03/2008	0.20	100
MJ9798	07/03/2008	0.20	100
MJ97A0	07/03/2008	0.20	100
MJ97A1	07/03/2008	0.20	100
MJ97A2	07/03/2008	0.20	100

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9754

Preparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
MJ97A3	07/03/2008	0.20	100
MJ97A4	07/03/2008	0.20	100
MJ97A5	07/03/2008	0.20	100
CRI03	07/03/2008		100
CCV05	07/03/2008		100
CCB05	07/03/2008		100

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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 23, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 20 sediment samples collected from the Big Wood River site located in Blaine County, Idaho has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ9755	MJ9756	MJ9757	MJ9758	MJ9759
MJ9760	MJ9761	MJ9762	MJ9763	MJ9764
MJ9765	MJ9766	MJ9789	MJ9790	MJ9791
MJ9792	MJ9793	MJ9799	MJ97B1	MJ97B2

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits (CRQLs) when applicable. The secondary reviewer changed high (H) or low (L) bias qualifiers (added by the primary reviewer to estimated results less than the CRQL) to "Q" qualifiers when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

July 14, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ9755, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Twenty (20) sediment samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ9755	MJ9756	MJ9757	MJ9758	MJ9759	MJ9760	MJ9761
MJ9762	MJ9763	MJ9764	MJ9765	MJ9766	MJ9789	MJ9790
MJ9791	MJ9792	MJ9793	MJ9799	MJ97B1	MJ97B2	

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/16/08 and 6/17/08. ICP-AES analysis was conducted on 6/26/08 and 7/7/08. Mercury analysis was conducted on 6/27/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (94-105%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (94-102%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries for the LCS were within the established control limits for solid samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of mercury and sodium. Affected samples were qualified (U) for these elements.

MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ9755. Percent recoveries (76-109%) were within the recovery criterion (75-125%) with the exception of antimony (23%) and selenium (72%). Antimony data were qualified (R or JL) and selenium data were qualified (JL or UJL). Antimony and selenium results may be biased low.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ9755. Relative percent differences ($\leq$ 11%) were within the acceptance criteria ($\leq$ 35%; $\pm$ 2xCRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION

A five-fold serial dilution was performed for sample MJ9755. Percent differences ($\leq$ 6%) were within the criterion ($\leq$ 10%) for the serial dilution analysis with the exception of zinc (13%). Zinc data were qualified (JL) and may be biased low.

ASSESSMENT SUMMARY

The following is a summary of qualified data: The laboratory applied (D) qualifier indicates a dilution that was performed in order to quantify the result within the instruments' calibration range.

Mercury and sodium data were qualified (U) due to the detected presence of these elements in the instrument and/or preparation blanks.

Antimony data were qualified (R or JL) due to a low recovery for the matrix spike. Antimony data may be biased low.

Selenium data were qualified (JL or UJL) due to a low recovery for the matrix spike. Selenium data may be biased low.

Zinc data were qualified (JL) due to a high percent difference in the serial dilution analysis with an indication of low bias.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9755

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-01

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 69.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10400			P
7440-36-0	Antimony	~~8.6~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	9.6			P
7440-39-3	Barium	110			P
7440-41-7	Beryllium	0.82			P
7440-43-9	Cadmium	0.37	JQ		P
7440-70-2	Calcium	4510			P
7440-47-3	Chromium	31.9			P
7440-48-4	Cobalt	7.0	JQ		P
7440-50-8	Copper	11.3			P
7439-89-6	Iron	14600			P
7439-92-1	Lead	23.6			P
7439-95-4	Magnesium	5670			P
7439-96-5	Manganese	304			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	20.0			P
7440-09-7	Potassium	1200			P
7782-49-2	Selenium	5.0	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	222	~~U~~	U	P
7440-28-0	Thallium	3.6	U		P
7440-62-2	Vanadium	24.3			P
7440-66-6	Zinc	56.7		~~E~~ JL	P

DH 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

14

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9756

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-02

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 63.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9800			P
7440-36-0	Antimony	~~9.5~~	~~B~~	~~N~~ R	P
7440-38-2	Arsenic	6.9			P
7440-39-3	Barium	110			P
7440-41-7	Beryllium	0.75	JQ		P
7440-43-9	Cadmium	0.36	JQ		P
7440-70-2	Calcium	6240			P
7440-47-3	Chromium	32.2			P
7440-48-4	Cobalt	6.8	JQ		P
7440-50-8	Copper	10.8			P
7439-89-6	Iron	14300			P
7439-92-1	Lead	18.5			P
7439-95-4	Magnesium	5940			P
7439-96-5	Manganese	255			P
7439-97-6	Mercury	0.065	~~B~~	U	CV
7440-02-0	Nickel	19.5			P
7440-09-7	Potassium	1270			P
7782-49-2	Selenium	5.5	~~B~~	~~N~~ UJL	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	230	~~B~~	U	P
7440-28-0	Thallium	4.0	U		P
7440-62-2	Vanadium	23.8			P
7440-66-6	Zinc	65.6		~~B~~ JL	P

ZM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ANIMAL MATTER; PLANT MATTER

USEPA - CLP

1A-IN

15

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9757

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-03

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 64.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3870			P
7440-36-0	Antimony	~~9.3~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	5.3			P
7440-39-3	Barium	147			P
7440-41-7	Beryllium	0.20	JQ		P
7440-43-9	Cadmium	0.93			P
7440-70-2	Calcium	105000		D	P
7440-47-3	Chromium	13.6			P
7440-48-4	Cobalt	2.8	JQ		P
7440-50-8	Copper	9.1			P
7439-89-6	Iron	7230			P
7439-92-1	Lead	43.5			P
7439-95-4	Magnesium	5510			P
7439-96-5	Manganese	117			P
7439-97-6	Mercury	0.083	~~U~~	U	CV
7440-02-0	Nickel	11.7			P
7440-09-7	Potassium	925			P
7782-49-2	Selenium	5.4	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	149	~~U~~	U	P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	28.9			P
7440-66-6	Zinc	71.5		~~B~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9758

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-04

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 18.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6020			P
7440-36-0	Antimony	~~31.9~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	1.5	JQ		P
7440-39-3	Barium	254			P
7440-41-7	Beryllium	0.37	JQ		P
7440-43-9	Cadmium	9.9			P
7440-70-2	Calcium	77400			P
7440-47-3	Chromium	6.0			P
7440-48-4	Cobalt	4.4	JQ		P
7440-50-8	Copper	23.8			P
7439-89-6	Iron	13300			P
7439-92-1	Lead	15.4			P
7439-95-4	Magnesium	5300			P
7439-96-5	Manganese	347			P
7439-97-6	Mercury	0.29	~~J~~	U	CV
7440-02-0	Nickel	96.1			P
7440-09-7	Potassium	1260	JQ		P
7782-49-2	Selenium	10.8	~~J~~	JQ ~~N~~ JL	P
7440-22-4	Silver	5.3	U		P
7440-23-5	Sodium	325	~~J~~	U	P
7440-28-0	Thallium	13.3	U		P
7440-62-2	Vanadium	11.1	JQ		P
7440-66-6	Zinc	876		~~R~~ JL	P

DSM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

17

EPA SAMPLE NO.

MJ9759

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-05

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4140			P
7440-36-0	Antimony	~~8.2~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	69.3			P
7440-41-7	Beryllium	0.27	JQ		P
7440-43-9	Cadmium	0.26	JQ		P
7440-70-2	Calcium	4520			P
7440-47-3	Chromium	14.0			P
7440-48-4	Cobalt	3.3	JQ		P
7440-50-8	Copper	7.5			P
7439-89-6	Iron	8100			P
7439-92-1	Lead	16.0			P
7439-95-4	Magnesium	3480			P
7439-96-5	Manganese	106			P
7439-97-6	Mercury	0.080	~~J~~	U	CV
7440-02-0	Nickel	13.1			P
7440-09-7	Potassium	619	JQ		P
7782-49-2	Selenium	4.8	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	144	~~J~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	15.5			P
7440-66-6	Zinc	68.9		~~E~~ JL	P

DH 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; ANIMAL MATTER

USEPA - CLP

1A-IN

18

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9760

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-06

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 72.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4410			P
7440-36-0	Antimony	~~8.3~~	~~B~~	~~N~~ R	P
7440-38-2	Arsenic	4.3			P
7440-39-3	Barium	90.1			P
7440-41-7	Beryllium	0.33	JQ		P
7440-43-9	Cadmium	0.30	JQ		P
7440-70-2	Calcium	4450			P
7440-47-3	Chromium	14.6			P
7440-48-4	Cobalt	3.6	JQ		P
7440-50-8	Copper	7.9			P
7439-89-6	Iron	8610			P
7439-92-1	Lead	14.7			P
7439-95-4	Magnesium	3710			P
7439-96-5	Manganese	118			P
7439-97-6	Mercury	0.068	~~B~~	U	CV
7440-02-0	Nickel	13.9			P
7440-09-7	Potassium	626	JQ		P
7782-49-2	Selenium	4.8	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	142	~~B~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	18.8			P
7440-66-6	Zinc	63.2		~~N~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

19

EPA SAMPLE NO.

MJ9761

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-07

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 71.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4960			P
7440-36-0	Antimony	~~8.4~~	~~J~~	~~N~~ R	P
7440-38-2	Arsenic	4.7			P
7440-39-3	Barium	91.9			P
7440-41-7	Beryllium	0.35	JQ		P
7440-43-9	Cadmium	0.33	JQ		P
7440-70-2	Calcium	5560			P
7440-47-3	Chromium	16.2			P
7440-48-4	Cobalt	3.9	JQ		P
7440-50-8	Copper	8.1			P
7439-89-6	Iron	9220			P
7439-92-1	Lead	17.6			P
7439-95-4	Magnesium	4000			P
7439-96-5	Manganese	112			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	15.5			P
7440-09-7	Potassium	712			P
7782-49-2	Selenium	4.9	~~J~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	162	~~J~~	U	P
7440-28-0	Thallium	3.5	U		P
7440-62-2	Vanadium	18.9			P
7440-66-6	Zinc	71.8		~~N~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

20

EPA SAMPLE NO.

MJ9762

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-08

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 65.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5210			P
7440-36-0	Antimony	~~9.2~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.1			P
7440-39-3	Barium	163			P
7440-41-7	Beryllium	0.40	JQ		P
7440-43-9	Cadmium	0.41	JQ		P
7440-70-2	Calcium	5720			P
7440-47-3	Chromium	17.1			P
7440-48-4	Cobalt	4.1	JQ		P
7440-50-8	Copper	8.7			P
7439-89-6	Iron	9240			P
7439-92-1	Lead	20.0			P
7439-95-4	Magnesium	4220			P
7439-96-5	Manganese	95.1			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	16.5			P
7440-09-7	Potassium	848			P
7782-49-2	Selenium	5.4	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	166	~~U~~	U	P
7440-28-0	Thallium	3.8	U		P
7440-62-2	Vanadium	20.0			P
7440-66-6	Zinc	87.2		~~B~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER; ANIMAL MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

21

EPA SAMPLE NO.

MJ9763

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-09

Level (low/med): LOW Date Received: 06/19/2008

Solids: 99.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4540			P
7440-36-0	Antimony	~~6.0~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	5.4			P
7440-39-3	Barium	74.3			P
7440-41-7	Beryllium	0.33	JQ		P
7440-43-9	Cadmium	0.35	JQ		P
7440-70-2	Calcium	3250			P
7440-47-3	Chromium	15.1			P
7440-48-4	Cobalt	3.9	JQ		P
7440-50-8	Copper	8.9			P
7439-89-6	Iron	9040			P
7439-92-1	Lead	15.2			P
7439-95-4	Magnesium	3610			P
7439-96-5	Manganese	156			P
7439-97-6	Mercury	0.055	~~U~~	U	CV
7440-02-0	Nickel	14.9			P
7440-09-7	Potassium	777			P
7782-49-2	Selenium	3.5	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	100	~~U~~	U	P
7440-28-0	Thallium	2.5	U		P
7440-62-2	Vanadium	18.6			P
7440-66-6	Zinc	63.6		~~N~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9764

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-10

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 73.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4610			P
7440-36-0	Antimony	~~8.1~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	5.7			P
7440-39-3	Barium	93.6			P
7440-41-7	Beryllium	0.34	JQ		P
7440-43-9	Cadmium	0.25	JQ		P
7440-70-2	Calcium	3950			P
7440-47-3	Chromium	15.2			P
7440-48-4	Cobalt	3.9	JQ		P
7440-50-8	Copper	8.4			P
7439-89-6	Iron	8880			P
7439-92-1	Lead	16.8			P
7439-95-4	Magnesium	3850			P
7439-96-5	Manganese	113			P
7439-97-6	Mercury	0.060	~~U~~	U	CV
7440-02-0	Nickel	14.8			P
7440-09-7	Potassium	658	JQ		P
7782-49-2	Selenium	4.7	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	150	~~U~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	18.8			P
7440-66-6	Zinc	62.7		~~E~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

23

EPA SAMPLE NO.

MJ9765

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-11

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 74.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5110			P
7440-36-0	Antimony	~~8.1~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.7			P
7440-39-3	Barium	93.6			P
7440-41-7	Beryllium	0.37	JQ		P
7440-43-9	Cadmium	0.32	JQ		P
7440-70-2	Calcium	5100			P
7440-47-3	Chromium	16.4			P
7440-48-4	Cobalt	3.9	JQ		P
7440-50-8	Copper	8.4			P
7439-89-6	Iron	9550			P
7439-92-1	Lead	16.1			P
7439-95-4	Magnesium	4110			P
7439-96-5	Manganese	128			P
7439-97-6	Mercury	0.075	~~J~~	U	CV
7440-02-0	Nickel	15.1			P
7440-09-7	Potassium	769			P
7782-49-2	Selenium	4.7	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	141	~~J~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	76.2		~~E~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9766

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-12

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 69.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6360			P
7440-36-0	Antimony	~~8.6~~	J	* R	P
7440-38-2	Arsenic	5.6			P
7440-39-3	Barium	118			P
7440-41-7	Beryllium	0.46	JQ		P
7440-43-9	Cadmium	0.49	JQ		P
7440-70-2	Calcium	7960			P
7440-47-3	Chromium	19.7			P
7440-48-4	Cobalt	4.6	JQ		P
7440-50-8	Copper	9.9			P
7439-89-6	Iron	10800			P
7439-92-1	Lead	21.6			P
7439-95-4	Magnesium	5140			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	0.081	J	U	CV
7440-02-0	Nickel	18.2			P
7440-09-7	Potassium	1020			P
7782-49-2	Selenium	5.0	J	* UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	176	J	U	P
7440-28-0	Thallium	3.6	U		P
7440-62-2	Vanadium	25.4			P
7440-66-6	Zinc	94.6		* JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ANIMAL MATTER; PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9789

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-13

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 54.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14300			P
7440-36-0	Antimony	1.8	J	JQ # JL	P
7440-38-2	Arsenic	7.3			P
7440-39-3	Barium	241			P
7440-41-7	Beryllium	1.0			P
7440-43-9	Cadmium	2.9			P
7440-70-2	Calcium	17500			P
7440-47-3	Chromium	34.7			P
7440-48-4	Cobalt	9.7			P
7440-50-8	Copper	23.9			P
7439-89-6	Iron	16600			P
7439-92-1	Lead	112			P
7439-95-4	Magnesium	6850			P
7439-96-5	Manganese	543			P
7439-97-6	Mercury	0.12	J	U	CV
7440-02-0	Nickel	29.0			P
7440-09-7	Potassium	2670			P
7782-49-2	Selenium	6.4	J	# UJL	P
7440-22-4	Silver	0.65	JQ		P
7440-23-5	Sodium	231	J	U	P
7440-28-0	Thallium	4.6	U		P
7440-62-2	Vanadium	34.2			P
7440-66-6	Zinc	207		# JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ9790

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-14

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 72.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6990			P
7440-36-0	Antimony	~~8~~ 3	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	5.0			P
7440-39-3	Barium	124			P
7440-41-7	Beryllium	0.49	JQ		P
7440-43-9	Cadmium	0.39	JQ		P
7440-70-2	Calcium	3710			P
7440-47-3	Chromium	21.3			P
7440-48-4	Cobalt	5.1	JQ		P
7440-50-8	Copper	8.0			P
7439-89-6	Iron	11700			P
7439-92-1	Lead	29.1			P
7439-95-4	Magnesium	4980			P
7439-96-5	Manganese	148			P
7439-97-6	Mercury	0.075	~~U~~	U	CV
7440-02-0	Nickel	14.9			P
7440-09-7	Potassium	1120			P
7782-49-2	Selenium	4.8	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	172	~~U~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	21.1			P
7440-66-6	Zinc	113		~~N~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9791

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-15

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 73.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7060			P
7440-36-0	Antimony	~~8.2~~	~~B~~	~~N~~ R	P
7440-38-2	Arsenic	6.2			P
7440-39-3	Barium	140			P
7440-41-7	Beryllium	0.48	JQ		P
7440-43-9	Cadmium	0.64	JQ		P
7440-70-2	Calcium	4920			P
7440-47-3	Chromium	22.9			P
7440-48-4	Cobalt	5.1	JQ		P
7440-50-8	Copper	10.9			P
7439-89-6	Iron	12100			P
7439-92-1	Lead	30.6			P
7439-95-4	Magnesium	5310			P
7439-96-5	Manganese	203			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	18.0			P
7440-09-7	Potassium	1110			P
7782-49-2	Selenium	4.8	~~B~~	~~N~~ UJL	P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	163	~~B~~	U	P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	22.2			P
7440-66-6	Zinc	125		~~B~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER; ANIMAL MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9792

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-16

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 75.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5730			P
7440-36-0	Antimony	~~8.0~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	3.9			P
7440-39-3	Barium	90.6			P
7440-41-7	Beryllium	0.40	JQ		P
7440-43-9	Cadmium	0.20	JQ		P
7440-70-2	Calcium	2680			P
7440-47-3	Chromium	19.7			P
7440-48-4	Cobalt	4.3	JQ		P
7440-50-8	Copper	5.4			P
7439-89-6	Iron	9710			P
7439-92-1	Lead	22.3			P
7439-95-4	Magnesium	3970			P
7439-96-5	Manganese	143			P
7439-97-6	Mercury	0.055	~~U~~	U	CV
7440-02-0	Nickel	12.0			P
7440-09-7	Potassium	852			P
7782-49-2	Selenium	4.7	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	146	~~U~~	U	P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	15.1			P
7440-66-6	Zinc	68.7		~~N~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER; ANIMAL MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9793

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-17

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 82.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5010			P
7440-36-0	Antimony	~~7.3~~	J	N R	P
7440-38-2	Arsenic	4.0			P
7440-39-3	Barium	53.6			P
7440-41-7	Beryllium	0.38	JQ		P
7440-43-9	Cadmium	0.16	JQ		P
7440-70-2	Calcium	2020			P
7440-47-3	Chromium	19.6			P
7440-48-4	Cobalt	4.4	JQ		P
7440-50-8	Copper	4.9			P
7439-89-6	Iron	9500			P
7439-92-1	Lead	12.4			P
7439-95-4	Magnesium	4090			P
7439-96-5	Manganese	167			P
7439-97-6	Mercury	0.048	J	U	CV
7440-02-0	Nickel	13.4			P
7440-09-7	Potassium	532	JQ		P
7782-49-2	Selenium	4.2	UJ	N UJL	P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	138	J	U	P
7440-28-0	Thallium	3.0	U		P
7440-62-2	Vanadium	15.0			P
7440-66-6	Zinc	35.6		R JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ9799

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-18

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 79.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5290			P
7440-36-0	Antimony	~~7.5~~	~~J~~	~~N~~ R	P
7440-38-2	Arsenic	2.9			P
7440-39-3	Barium	122			P
7440-41-7	Beryllium	0.36	J Q		P
7440-43-9	Cadmium	0.37	J Q		P
7440-70-2	Calcium	12300			P
7440-47-3	Chromium	19.4			P
7440-48-4	Cobalt	5.9	J Q		P
7440-50-8	Copper	7.0			P
7439-89-6	Iron	9540			P
7439-92-1	Lead	42.8			P
7439-95-4	Magnesium	3700			P
7439-96-5	Manganese	176			P
7439-97-6	Mercury	0.057	~~J~~	U	CV
7440-02-0	Nickel	14.8			P
7440-09-7	Potassium	1050			P
7782-49-2	Selenium	4.4	~~J~~	~~N~~ UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	156	~~J~~	U	P
7440-28-0	Thallium	3.1	U		P
7440-62-2	Vanadium	20.4			P
7440-66-6	Zinc	54.5		~~E~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B1

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-19

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 70.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5060			P
7440-36-0	Antimony	~~8.5~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	7.8			P
7440-39-3	Barium	169			P
7440-41-7	Beryllium	0.44	JQ		P
7440-43-9	Cadmium	1.3			P
7440-70-2	Calcium	17900			P
7440-47-3	Chromium	15.7			P
7440-48-4	Cobalt	4.0	JQ		P
7440-50-8	Copper	27.9			P
7439-89-6	Iron	11400			P
7439-92-1	Lead	15.2			P
7439-95-4	Magnesium	9850			P
7439-96-5	Manganese	230			P
7439-97-6	Mercury	0.072	~~J~~	U	CV
7440-02-0	Nickel	34.9			P
7440-09-7	Potassium	1390			P
7782-49-2	Selenium	5.0	~~U~~	~~N~~ UJL	P
7440-22-4	Silver	0.19	JQ		P
7440-23-5	Sodium	108	~~J~~	U	P
7440-28-0	Thallium	3.5	U		P
7440-62-2	Vanadium	60.2			P
7440-66-6	Zinc	137		~~E~~ JL	P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B2

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Matrix (soil/water): SOIL Lab Sample ID: 0806053-20

Level (low/med): LOW Date Received: 06/19/2008

% Solids: 77.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10900			P
7440-36-0	Antimony	~~7.8~~	UJ	N R	P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	129			P
7440-41-7	Beryllium	0.53	JQ		P
7440-43-9	Cadmium	0.27	JQ		P
7440-70-2	Calcium	5390			P
7440-47-3	Chromium	53.5			P
7440-48-4	Cobalt	10.4			P
7440-50-8	Copper	9.0			P
7439-89-6	Iron	19100			P
7439-92-1	Lead	2.9			P
7439-95-4	Magnesium	9440			P
7439-96-5	Manganese	673			P
7439-97-6	Mercury	0.052	J	U	CV
7440-02-0	Nickel	18.8			P
7440-09-7	Potassium	3910			P
7782-49-2	Selenium	4.5	UJ	N UJL	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	198	J	U	P
7440-28-0	Thallium	3.2	U		P
7440-62-2	Vanadium	50.0			P
7440-66-6	Zinc	46.9		E JL	P

RM 7-14-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	29.5
Antimony	206.83	60	9.5
Arsenic	189.04	10	4.8
Barium	233.53	200	0.50
Beryllium	313.11	5	0.110
Cadmium	226.50	5	0.37
Calcium	318.13	5000	45.0
Chromium	267.72	10	0.35
Cobalt	228.62	50	0.69
Copper	324.75	25	1.10
Iron	262.83	100	2.3
Lead	168.22	10	3.2
Magnesium	279.08	5000	4.6
Manganese	257.61	15	0.19
Nickel	231.60	40	1.40
Potassium	766.49	5000	11.4
Selenium	196.09	35	10.7
Silver	328.07	10	0.64
Sodium	330.24	5000	212
Thallium	190.86	25	8.5
Vanadium	292.40	50	0.29
Zinc	213.86	60	1.80

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	20.00	0.37
Antimony	206.83	6.00	0.72
Arsenic	189.04	1.00	0.25
Barium	233.53	20.00	0.05
Beryllium	313.11	0.50	0.00
Cadmium	226.50	0.50	0.02
Calcium	318.13	500.00	3.46
Chromium	267.72	1.00	0.13
Cobalt	228.62	5.00	0.04
Copper	324.75	2.50	0.11
Iron	262.83	10.00	0.53
Lead	168.22	1.00	0.31
Magnesium	279.08	500.00	0.31
Manganese	257.61	1.50	0.02
Nickel	231.60	4.00	0.09
Potassium	766.49	500.00	0.55
Selenium	196.09	3.50	0.97
Silver	328.07	1.00	0.08
Sodium	330.24	500.00	10.90
Thallium	190.86	2.50	0.56
Vanadium	292.40	5.00	0.08
Zinc	213.86	6.00	0.18

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	29.5
Antimony	206.83	60	9.5
Arsenic	189.04	10	4.8
Barium	233.53	200	0.50
Beryllium	313.11	5	0.110
Cadmium	226.50	5	0.37
Calcium	318.13	5000	45.0
Chromium	267.72	10	0.35
Cobalt	228.62	50	0.69
Copper	324.75	25	1.10
Iron	262.83	100	2.3
Lead	168.22	10	3.2
Magnesium	279.08	5000	4.6
Manganese	257.61	15	0.19
Nickel	231.60	40	1.40
Potassium	766.49	5000	11.4
Selenium	196.09	35	10.7
Silver	328.07	10	0.64
Sodium	330.24	5000	212
Thallium	190.86	25	8.5
Vanadium	292.40	50	0.29
Zinc	213.86	60	1.80

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.10	0.040

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

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PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Preparation Method: HS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBS01	06/26/2008	1.00	100
LCSS01	06/26/2008	1.00	100
MJ9755	06/26/2008	1.00	100
MJ9755D	06/26/2008	1.00	100
MJ9755S	06/26/2008	1.00	100
MJ9756	06/26/2008	1.00	100
MJ9757	06/26/2008	1.00	100
MJ9758	06/26/2008	1.00	100
MJ9759	06/26/2008	1.00	100
MJ9760	06/26/2008	1.00	100
MJ9761	06/26/2008	1.00	100
MJ9762	06/26/2008	1.00	100
MJ9763	06/26/2008	1.00	100
MJ9764	06/26/2008	1.00	100
MJ9765	06/26/2008	1.00	100
MJ9766	06/26/2008	1.00	100
MJ9789	06/26/2008	1.00	100
MJ9790	06/26/2008	1.00	100
MJ9791	06/26/2008	1.00	100
MJ9792	06/26/2008	1.00	100
MJ9793	06/26/2008	1.00	100
MJ9799	06/26/2008	1.00	100
MJ97B1	06/26/2008	1.00	100
MJ97B2	06/26/2008	1.00	100

USEPA - CLP

12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Preparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	06/26/2008		100
S0.2	06/26/2008		100
S0.5	06/26/2008		100
S1	06/26/2008		100
S2	06/26/2008		100
S6	06/26/2008		100
ICV01	06/26/2008		100
ICB01	06/26/2008		100
CRI01	06/26/2008		100
CCV01	06/26/2008		100
CCB01	06/26/2008		100
PBS01	06/26/2008	0.20	100
LCSS01	06/26/2008	0.20	100
MJ9755	06/26/2008	0.20	100
MJ9755D	06/26/2008	0.20	100
MJ9755S	06/26/2008	0.20	100
MJ9756	06/26/2008	0.20	100
MJ9757	06/26/2008	0.20	100
MJ9758	06/26/2008	0.20	100
MJ9759	06/26/2008	0.20	100
MJ9760	06/26/2008	0.20	100
CCV02	06/26/2008		100
CCB02	06/26/2008		100
MJ9761	06/26/2008	0.20	100
MJ9762	06/26/2008	0.20	100
MJ9763	06/26/2008	0.20	100
MJ9764	06/26/2008	0.20	100
MJ9765	06/26/2008	0.20	100
MJ9766	06/26/2008	0.20	100
MJ9789	06/26/2008	0.20	100
MJ9790	06/26/2008	0.20	100
CRI02	06/26/2008		100
CCV03	06/26/2008		100
CCB03	06/26/2008		100
MJ9791	06/26/2008	0.20	100
MJ9792	06/26/2008	0.20	100
MJ9793	06/26/2008	0.20	100
MJ9799	06/26/2008	0.20	100
MJ97B1	06/26/2008	0.20	100

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ9755

Preparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
MJ97B2	06/26/2008	0.20	100
CRI03	06/26/2008		100
CCV04	06/26/2008		100
CCB04	06/26/2008		100

ecology and environment, inc.
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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 24, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 15 sediment samples collected from the Big Wood River site located in Blaine County, Idaho, has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The samples were numbered:

MJ97A6	MJ97A7	MJ97A8	MJ97B0	MJ97B4
MJ97B5	MJ97B6	MJ97B7	MJ97B8	MJ97B9
MJ97C0	MJ97C1	MJ97C2	MJ97C3	MJ97C6

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits (CRQLs) when applicable. The secondary reviewer changed high (H) or low (L) bias qualifiers (added by the primary reviewer to estimated results less than the CRQL) to "Q" qualifiers when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

July 22, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ97A6, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. Fifteen (15) sediment samples were analyzed for total elements by Bonner Analytical, Hattiesburg, MS. Sample numbers for this delivery group are:

MJ97A6	MJ97A7	MJ97A8	MJ97B0	MJ97B4
MJ97B5	MJ97B6	MJ97B7	MJ97B8	MJ97B9
MJ97C0	MJ97C1	MJ97C2	MJ97C3	MJ97C6

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). Samples were collected on 6/17/08 through 6/19/08. ICP-AES analysis was conducted on 6/30/08 and 7/1/08. Mercury analysis was conducted on 7/3/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (95-104%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and four standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (90-104%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries for the LCS were within the established control limits for solid samples.

BLANKS - Acceptable

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results.

MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ97A6. Percent recoveries (85-117%) were within the recovery criterion (75-125%) with the exception of antimony (8%) and cadmium (164%). Antimony results were qualified (JL or R) and may be biased low. Cadmium results were qualified (JH) and may be biased high.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ97A6. Relative percent differences ($\leq$ 16%) were within the acceptance criteria ($\leq$ 35%; $\pm$ 2xCRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION

A five-fold serial dilution was performed for sample MJ97A6. Percent differences ($\leq$ 10%) were within the criterion ($\leq$ 10%) for the serial dilution analysis with the exception of cobalt (14%). Cobalt data were qualified (JL) and may be biased low.

ASSESSMENT SUMMARY

The following is a summary of qualified data: The (D) qualifier applies to samples that were diluted by the lab.

Antimony data were qualified (JL or R) due to a low recovery for the matrix spike. Antimony may be biased low.

Cadmium data were qualified (JH) due to a high recovery for the matrix spike. Cadmium may be biased high.

Cobalt data were qualified (JL) due to a high percent difference for the serial dilution result. Cobalt may be biased low.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

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EPA SAMPLE NO.

MJ97A6

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-01

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 93.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16800			P
7440-36-0	Antimony	10.7		N JL	P
7440-38-2	Arsenic	330			P
7440-39-3	Barium	276			P
7440-41-7	Beryllium	0.93			P
7440-43-9	Cadmium	22.9		N JH	P
7440-70-2	Calcium	21400			P
7440-47-3	Chromium	39.7			P
7440-48-4	Cobalt	13.2		E JL	P
7440-50-8	Copper	93.9			P
7439-89-6	Iron	32600			P
7439-92-1	Lead	2070			P
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese	1610			P
7439-97-6	Mercury	0.95			CV
7440-02-0	Nickel	56.4			P
7440-09-7	Potassium	4650			P
7782-49-2	Selenium	2.3	JQ		P
7440-22-4	Silver	13.4			P
7440-23-5	Sodium	96.8	JQ		P
7440-28-0	Thallium	4.9			P
7440-62-2	Vanadium	79.7			P
7440-66-6	Zinc	3340		D	P

DV 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

15

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97A7

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-02

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 57.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2160			P
7440-36-0	Antimony	~~10.5~~	~~U~~	~~R~~ R	P
7440-38-2	Arsenic	1.7	U		P
7440-39-3	Barium	15.1	JQ		P
7440-41-7	Beryllium	0.12	JQ		P
7440-43-9	Cadmium	0.08	~~J~~	JQ ~~R~~ JH	P
7440-70-2	Calcium	8210			P
7440-47-3	Chromium	4.4			P
7440-48-4	Cobalt	0.37	~~J~~	JQ ~~R~~ JH	P
7440-50-8	Copper	2.1	JQ		P
7439-89-6	Iron	2300			P
7439-92-1	Lead	3.4			P
7439-95-4	Magnesium	767	JQ		P
7439-96-5	Manganese	17.6			P
7439-97-6	Mercury	0.17	U		CV
7440-02-0	Nickel	3.9	JQ		P
7440-09-7	Potassium	396	JQ		P
7782-49-2	Selenium	6.1	U		P
7440-22-4	Silver	1.7	U		P
7440-23-5	Sodium	94.5	JQ		P
7440-28-0	Thallium	4.4	U		P
7440-62-2	Vanadium	2.1	JQ		P
7440-66-6	Zinc	19.1			P

RM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

16

EPA SAMPLE NO.

MJ97A8

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-03

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 86.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1330			P
7440-36-0	Antimony	~~6.9~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	5.6			P
7440-39-3	Barium	133			P
7440-41-7	Beryllium	0.15	JQ		P
7440-43-9	Cadmium	2.2		~~N~~ JH	P
7440-70-2	Calcium	334000		~~D~~	P
7440-47-3	Chromium	2.5	JQ	~~D~~	P
7440-48-4	Cobalt	0.64	~~J~~	JQ ~~E~~ FLAG	P
7440-50-8	Copper	10.2			P
7439-89-6	Iron	1640			P
7439-92-1	Lead	61.5			P
7439-95-4	Magnesium	5630			P
7439-96-5	Manganese	56.7			P
7439-97-6	Mercury	0.051	JQ		CV
7440-02-0	Nickel	20.8			P
7440-09-7	Potassium	320	JQ		P
7782-49-2	Selenium	4.1	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	68.2	JQ		P
7440-28-0	Thallium	2.9	U		P
7440-62-2	Vanadium	8.1			P
7440-66-6	Zinc	194			P

2-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

17

EPA SAMPLE NO.

MJ97B0

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-04

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 92.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13800			P
7440-36-0	Antimony	~~6.5~~	U	N R	P
7440-38-2	Arsenic	48.5			P
7440-39-3	Barium	199			P
7440-41-7	Beryllium	0.78			P
7440-43-9	Cadmium	87.9		N JH	P
7440-70-2	Calcium	12100			P
7440-47-3	Chromium	28.0			P
7440-48-4	Cobalt	10.4		E JL	P
7440-50-8	Copper	89.7			P
7439-89-6	Iron	20200			P
7439-92-1	Lead	1530			P
7439-95-4	Magnesium	9440			P
7439-96-5	Manganese	1460			P
7439-97-6	Mercury	0.61			CV
7440-02-0	Nickel	59.9			P
7440-09-7	Potassium	3460			P
7782-49-2	Selenium	12.5			P
7440-22-4	Silver	26.2			P
7440-23-5	Sodium	40.4	J		P
7440-28-0	Thallium	4.2			P
7440-62-2	Vanadium	91.1			P
7440-66-6	Zinc	6430		D	P

DH 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

18

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B4

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-05

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 60.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6450			P
7440-36-0	Antimony	~~10.0~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	141			P
7440-41-7	Beryllium	0.41	J	Q	P
7440-43-9	Cadmium	0.83	~~J~~	JQ ~~N~~ J+	P
7440-70-2	Calcium	8580			P
7440-47-3	Chromium	19.0			P
7440-48-4	Cobalt	4.3	~~J~~	JQ ~~E~~ J+	P
7440-50-8	Copper	12.1			P
7439-89-6	Iron	10200			P
7439-92-1	Lead	24.1			P
7439-95-4	Magnesium	5320			P
7439-96-5	Manganese	176			P
7439-97-6	Mercury	0.17	U		CV
7440-02-0	Nickel	17.9			P
7440-09-7	Potassium	922			P
7782-49-2	Selenium	5.8	U		P
7440-22-4	Silver	1.7	U		P
7440-23-5	Sodium	121	J	Q	P
7440-28-0	Thallium	4.2	U		P
7440-62-2	Vanadium	21.7			P
7440-66-6	Zinc	106			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS; ROCKS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

19

EPA SAMPLE NO.

MJ97B5

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-06

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 70.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7620			P
7440-36-0	Antimony	~~8.5~~	~~U~~	~~R~~ R	P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	125			P
7440-41-7	Beryllium	0.46	JQ		P
7440-43-9	Cadmium	1.2		~~R~~ JH	P
7440-70-2	Calcium	6350			P
7440-47-3	Chromium	19.2			P
7440-48-4	Cobalt	4.8	~~J~~	JQ ~~E J H~~	P
7440-50-8	Copper	15.1			P
7439-89-6	Iron	10900			P
7439-92-1	Lead	20.0			P
7439-95-4	Magnesium	4230			P
7439-96-5	Manganese	212			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	17.8			P
7440-09-7	Potassium	1730			P
7782-49-2	Selenium	4.9	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	81.3	JQ		P
7440-28-0	Thallium	3.5	U		P
7440-62-2	Vanadium	22.3			P
7440-66-6	Zinc	102			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

20

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B6

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-07

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 36.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9160			P
7440-36-0	Antimony	~~16.7~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	2.8	U		P
7440-39-3	Barium	147			P
7440-41-7	Beryllium	0.59	J	Q	P
7440-43-9	Cadmium	1.7		~~N~~ J H	P
7440-70-2	Calcium	8400			P
7440-47-3	Chromium	25.0			P
7440-48-4	Cobalt	5.3	~~J~~	J Q ~~E~~ J H	P
7440-50-8	Copper	19.2			P
7439-89-6	Iron	11600			P
7439-92-1	Lead	41.2			P
7439-95-4	Magnesium	5970			P
7439-96-5	Manganese	124			P
7439-97-6	Mercury	0.12	J	Q	CV
7440-02-0	Nickel	21.7			P
7440-09-7	Potassium	1220	J	Q	P
7782-49-2	Selenium	9.7	U		P
7440-22-4	Silver	2.8	U		P
7440-23-5	Sodium	186	J	Q	P
7440-28-0	Thallium	6.9	U		P
7440-62-2	Vanadium	27.2			P
7440-66-6	Zinc	185			P

DH 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

21

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B7

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-08

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 60.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6060			P
7440-36-0	Antimony	~~9~~ 9	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	2.4			P
7440-39-3	Barium	128			P
7440-41-7	Beryllium	0.40	J Q		P
7440-43-9	Cadmium	0.90		~~N~~ JH	P
7440-70-2	Calcium	6980			P
7440-47-3	Chromium	17.0			P
7440-48-4	Cobalt	3.8	~~J~~	JQ E JLM	P
7440-50-8	Copper	11.4			P
7439-89-6	Iron	8880			P
7439-92-1	Lead	26.0			P
7439-95-4	Magnesium	4360			P
7439-96-5	Manganese	131			P
7439-97-6	Mercury	0.17	U		CV
7440-02-0	Nickel	15.1			P
7440-09-7	Potassium	829			P
7782-49-2	Selenium	5.8	U		P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	99.4	J Q		P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	19.3			P
7440-66-6	Zinc	111			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

22

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B8

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-09

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 50.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7920			P
7440-36-0	Antimony	~~11.8~~	~~B~~	~~N~~ R	P
7440-38-2	Arsenic	5.9			P
7440-39-3	Barium	173			P
7440-41-7	Beryllium	0.52	J Q		P
7440-43-9	Cadmium	1.0		~~N~~ J H	P
7440-70-2	Calcium	8960			P
7440-47-3	Chromium	23.2			P
7440-48-4	Cobalt	5.4	~~J~~	~~J Q~~ E J L	P
7440-50-8	Copper	16.8			P
7439-89-6	Iron	12200			P
7439-92-1	Lead	28.4			P
7439-95-4	Magnesium	6260			P
7439-96-5	Manganese	206			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	23.4			P
7440-09-7	Potassium	1070			P
7782-49-2	Selenium	6.9	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	148	J Q		P
7440-28-0	Thallium	4.9	U		P
7440-62-2	Vanadium	28.0			P
7440-66-6	Zinc	119			P

RM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

23

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B9

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-10

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 46.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6060			P
7440-36-0	Antimony	~~12.8~~	~~U~~	~~J~~ R	P
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	82.4			P
7440-41-7	Beryllium	0.33	J	Q	P
7440-43-9	Cadmium	0.64	~~J~~	JQ ~~J~~ J+	P
7440-70-2	Calcium	6260			P
7440-47-3	Chromium	19.7			P
7440-48-4	Cobalt	4.9	~~J~~	JQ ~~J~~ J+	P
7440-50-8	Copper	9.7			P
7439-89-6	Iron	7910			P
7439-92-1	Lead	20.8			P
7439-95-4	Magnesium	4490			P
7439-96-5	Manganese	66.2			P
7439-97-6	Mercury	0.21	U		CV
7440-02-0	Nickel	17.3			P
7440-09-7	Potassium	689	J	Q	P
7782-49-2	Selenium	7.5	U		P
7440-22-4	Silver	2.1	U		P
7440-23-5	Sodium	101	J	Q	P
7440-28-0	Thallium	5.4	U		P
7440-62-2	Vanadium	21.5			P
7440-66-6	Zinc	89.3			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER

USEPA - CLP

1A-IN

24

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C0

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

atrix (soil/water): SOIL Lab Sample ID: 0806070-11

evel (low/med): LOW Date Received: 06/20/2008

Solids: 66.9

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5680			P
7440-36-0	Antimony	~~9.0~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	8.0			P
7440-39-3	Barium	130			P
7440-41-7	Beryllium	0.37	J		P
7440-43-9	Cadmium	0.67	~~J~~	~~JQ~~ ~~N~~ ~~J~~	P
7440-70-2	Calcium	4370			P
7440-47-3	Chromium	20.2			P
7440-48-4	Cobalt	4.8	~~J~~	~~JQ~~ ~~E~~ ~~J~~	P
7440-50-8	Copper	11.7			P
7439-89-6	Iron	11300			P
7439-92-1	Lead	25.8			P
7439-95-4	Magnesium	4790			P
7439-96-5	Manganese	162			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	16.6			P
7440-09-7	Potassium	701	J		P
7782-49-2	Selenium	5.2	U		P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	94.8	J		P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	21.6			P
7440-66-6	Zinc	79.8			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

25

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C1

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-12

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 45.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6130			P
7440-36-0	Antimony	~~19.2~~	~~U~~	~~N R~~	P
7440-38-2	Arsenic	1.5	J	Q	P
7440-39-3	Barium	92.1			P
7440-41-7	Beryllium	0.38	J	Q	P
7440-43-9	Cadmium	0.60	~~J~~	~~J Q N J H~~	P
7440-70-2	Calcium	8370			P
7440-47-3	Chromium	20.1			P
7440-48-4	Cobalt	4.3	~~J~~	~~J Q E F~~	P
7440-50-8	Copper	12.6			P
7439-89-6	Iron	10400			P
7439-92-1	Lead	21.5			P
7439-95-4	Magnesium	4950			P
7439-96-5	Manganese	110			P
7439-97-6	Mercury	0.22	U		CV
7440-02-0	Nickel	17.5			P
7440-09-7	Potassium	797	J	Q	P
7782-49-2	Selenium	7.7	U		P
7440-22-4	Silver	2.2	U		P
7440-23-5	Sodium	158	J	Q	P
7440-28-0	Thallium	5.5	U		P
7440-62-2	Vanadium	22.7			P
7440-66-6	Zinc	91.0			P

7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C2

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-13

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 59.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10200			P
7440-36-0	Antimony	~~10.2~~	~~U~~	N R	P
7440-38-2	Arsenic	8.2			P
7440-39-3	Barium	142			P
7440-41-7	Beryllium	0.72	JQ		P
7440-43-9	Cadmium	1.0		N JH	P
7440-70-2	Calcium	6500			P
7440-47-3	Chromium	29.8			P
7440-48-4	Cobalt	7.0	~~J~~	JQ E JLM	P
7440-50-8	Copper	13.8			P
7439-89-6	Iron	14500			P
7439-92-1	Lead	42.4			P
7439-95-4	Magnesium	6040			P
7439-96-5	Manganese	323			P
7439-97-6	Mercury	0.069	JQ		CV
7440-02-0	Nickel	19.6			P
7440-09-7	Potassium	1390			P
7782-49-2	Selenium	5.9	U		P
7440-22-4	Silver	1.7	U		P
7440-23-5	Sodium	97.8	JQ		P
7440-28-0	Thallium	4.2	U		P
7440-62-2	Vanadium	24.4			P
7440-66-6	Zinc	176			P

JM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

USEPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C3

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-14

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 71.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4620			P
7440-36-0	Antimony	~~8.4~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.0			P
7440-39-3	Barium	130			P
7440-41-7	Beryllium	0.29	JQ		P
7440-43-9	Cadmium	0.44	~~J~~	JQ ~~N~~ JH	P
7440-70-2	Calcium	4890			P
7440-47-3	Chromium	15.6			P
7440-48-4	Cobalt	3.5	~~J~~	JQ E JH	P
7440-50-8	Copper	7.9			P
7439-89-6	Iron	8630			P
7439-92-1	Lead	16.3			P
7439-95-4	Magnesium	4050			P
7439-96-5	Manganese	139			P
7439-97-6	Mercury	0.12	JQ		CV
7440-02-0	Nickel	14.7			P
7440-09-7	Potassium	607	JQ		P
7782-49-2	Selenium	4.9	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	109	JQ		P
7440-28-0	Thallium	3.5	U		P
7440-62-2	Vanadium	18.0			P
7440-66-6	Zinc	69.0			P

DM 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; ROCKS

USEPA - CLP

1A-IN

28

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97C6

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Matrix (soil/water): SOIL Lab Sample ID: 0806070-15

Level (low/med): LOW Date Received: 06/20/2008

% Solids: 31.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20400			P
7440-36-0	Antimony	~~19.0~~	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	61.7			P
7440-39-3	Barium	233			P
7440-41-7	Beryllium	0.96	JQ		P
7440-43-9	Cadmium	8.2		~~N~~ JH	P
7440-70-2	Calcium	17400			P
7440-47-3	Chromium	49.4			P
7440-48-4	Cobalt	14.5	~~J~~	JQ ~~E~~ F[4m]	P
7440-50-8	Copper	239			P
7439-89-6	Iron	26200			P
7439-92-1	Lead	74.4			P
7439-95-4	Magnesium	12400			P
7439-96-5	Manganese	308			P
7439-97-6	Mercury	0.17	JQ		CV
7440-02-0	Nickel	51.5			P
7440-09-7	Potassium	4360			P
7782-49-2	Selenium	10.3	JQ		P
7440-22-4	Silver	3.2	U		P
7440-23-5	Sodium	219	JQ		P
7440-28-0	Thallium	5.4	JQ		P
7440-62-2	Vanadium	80.3			P
7440-66-6	Zinc	593			P

DS 7-22-08

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments: PLANT MATTER; WORMS

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: NP1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	14.9
Antimony	206.83	60	7.5
Arsenic	189.04	10	4.9
Barium	233.53	200	0.61
Beryllium	313.11	5	0.030
Cadmium	226.50	5	0.22
Calcium	318.13	5000	18.4
Chromium	267.72	10	0.48
Cobalt	228.62	50	0.77
Copper	324.75	25	0.6
Iron	262.83	100	5.2
Lead	168.22	10	4.9
Magnesium	279.08	5000	7.7
Manganese	257.61	15	0.50
Nickel	231.60	40	1.41
Potassium	766.49	5000	5.6
Selenium	196.09	35	4.1
Silver	328.07	10	1.6
Sodium	330.24	5000	176
Thallium	190.86	25	4.0
Vanadium	292.40	50	0.8
Zinc	213.86	60	0.58

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	20.00	7.2
Antimony	206.83	6.00	0.53
Arsenic	189.04	1.00	0.48
Barium	233.53	20.00	0.172
Beryllium	313.11	0.50	0.0050
Cadmium	226.50	0.50	0.036
Calcium	318.13	500.00	3.7
Chromium	267.72	1.00	0.153
Cobalt	228.62	5.00	0.069
Copper	324.75	2.50	0.12
Iron	262.83	10.00	1.09
Lead	168.22	1.00	0.43
Magnesium	279.08	500.00	1.1
Manganese	257.61	1.50	0.178
Nickel	231.60	4.00	0.267
Potassium	766.49	500.00	2.09
Selenium	196.09	3.50	0.81
Silver	328.07	1.00	0.12
Sodium	330.24	500.00	33.3
Thallium	190.86	2.50	1.12
Vanadium	292.40	5.00	0.12
Zinc	213.86	6.00	0.096

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Instrument Type: P Instrument ID: Spectro Ciros02 Date: 02/29/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	72.4
Antimony	206.83	60	5.3
Arsenic	189.04	10	4.8
Barium	233.53	200	1.72
Beryllium	313.11	5	0.050
Cadmium	226.50	5	0.36
Calcium	318.13	5000	36.8
Chromium	267.72	10	1.53
Cobalt	228.62	50	0.69
Copper	324.75	25	1.2
Iron	262.83	100	10.9
Lead	168.22	10	4.3
Magnesium	279.08	5000	10.7
Manganese	257.61	15	1.78
Nickel	231.60	40	2.67
Potassium	766.49	5000	20.9
Selenium	196.09	35	8.1
Silver	328.07	10	1.2
Sodium	330.24	5000	333
Thallium	190.86	25	11.5
Vanadium	292.40	50	1.19
Zinc	213.86	60	1.0

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.10	0.040

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

USEPA - CLP

12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

reparation Method: HS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBS01	06/27/2008	1.00	100
LCSS01	06/27/2008	1.00	100
MJ97A6	06/27/2008	1.00	100
MJ97A6D	06/27/2008	1.00	100
MJ97A6S	06/27/2008	1.00	100
MJ97A7	06/27/2008	1.00	100
MJ97A8	06/27/2008	1.00	100
MJ97B0	06/27/2008	1.00	100
MJ97B4	06/27/2008	1.00	100
MJ97B5	06/27/2008	1.00	100
MJ97B6	06/27/2008	1.00	100
MJ97B7	06/27/2008	1.00	100
MJ97B8	06/27/2008	1.00	100
MJ97B9	06/27/2008	1.00	100
MJ97C0	06/27/2008	1.00	100
MJ97C1	06/27/2008	1.00	100
MJ97C2	06/27/2008	1.00	100
MJ97C3	06/27/2008	1.00	100
MJ97C6	06/27/2008	1.00	100

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12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

Preparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	07/03/2008		100
S0.2	07/03/2008		100
S0.5	07/03/2008		100
S1	07/03/2008		100
S2	07/03/2008		100
S6	07/03/2008		100
ICV01	07/03/2008		100
ICB01	07/03/2008		100
CRI01	07/03/2008		100
CCV01	07/03/2008		100
CCB01	07/03/2008		100
PBS01	07/03/2008	0.20	100
LCSS01	07/03/2008	0.20	100
CCV02	07/03/2008		100
CCB02	07/03/2008		100
CRI02	07/03/2008		100
CRI03	07/03/2008		100
CCV03	07/03/2008		100
CCB03	07/03/2008		100
MJ97A6	07/03/2008	0.20	100
MJ97A6D	07/03/2008	0.20	100
MJ97A6S	07/03/2008	0.20	100
MJ97A7	07/03/2008	0.20	100
MJ97A8	07/03/2008	0.20	100
MJ97B0	07/03/2008	0.20	100
MJ97B4	07/03/2008	0.20	100
MJ97B5	07/03/2008	0.20	100
CCV04	07/03/2008		100
CCB04	07/03/2008		100
MJ97B6	07/03/2008	0.20	100
MJ97B7	07/03/2008	0.20	100
MJ97B8	07/03/2008	0.20	100
MJ97B9	07/03/2008	0.20	100
MJ97C0	07/03/2008	0.20	100
MJ97C1	07/03/2008	0.20	100
MJ97C2	07/03/2008		100
MJ97C3	07/03/2008		100
CRI04	07/03/2008		100
CCV05	07/03/2008		100

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12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97A6

reparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CCB05	07/03/2008		100
MJ97C6	07/03/2008	0.20	100
CRI05	07/03/2008		100
CCV06	07/03/2008		100
CCB06	07/03/2008		100
MJ94Z0	07/03/2008		100
MJ94Z1	07/03/2008		100
MJ94Z2	07/03/2008		100
MJ94Z3	07/03/2008		100
MJ94Z4	07/03/2008		100
MJ94Z5	07/03/2008		100
MJ94Z6	07/03/2008		100
MJ94Z7	07/03/2008		100
MJ94Z8	07/03/2008		100
MJ94Z1D	07/03/2008		100
MJ94Z1S	07/03/2008		100

ecology and environment, inc.
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720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: June 23, 2008

TO: Renee Nordeen, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Summary Check,**
Big Wood River, Blaine County, Idaho

REF: TDD: 07-05-0014 PAN: 002233.0215.01SI

The data summary check of 1 sediment sample collected from the Big Wood River site located in Blaine County, Idaho, has been completed. Analysis for Target Analyte List (TAL) metals (EPA CLP SOW ILM05.4) was performed by Bonner Analytical, Hattiesburg, Mississippi.

The sample was numbered: MJ97B3

No discrepancies were noted. The secondary reviewer added "Q" bias qualifiers to positive sample results less than the contract required quantitation limits when applicable.

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

July 14, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Big Wood River Site Assessment, Case# 37589, SDG: MJ97B3, Inorganic Analyses

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-115)

CC: Renee Nordeen, E&E Inc.

The data validation of inorganic analyses for the above sample set is complete. One (1) sediment sample was analyzed for total elements by Bonner Analytical, Hattiesburg, MS. The Sample number for this delivery group is:

MJ97B3

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA CLP National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (ICP 180 days, Hg 28 days). The sample was collected on 6/16/08. ICP-AES analysis was conducted on 7/8/08. Mercury analysis was conducted on 7/3/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For the ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Verification standard results (94-110%) were within the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (0.999) met the criterion ($\geq$ 0.995). Recoveries for verification standards (87-104%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency for each analytical run. ICS recoveries met the recovery criteria ($\pm$ 20%; $\pm$ 2xCRDL) for all applicable elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

Analyte recoveries for the LCS were within the established control limits for solid samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Detected blank results were below a factor (5X) that could impact sample results with the exception of sodium. The sample was qualified (U) for sodium.

MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ97B3. Percent recoveries (76-109%) were within the recovery criterion (75-125%) with the exception of antimony (51%) and arsenic (148%). The antimony result was qualified (UJL) and may be biased low whereas the arsenic result was qualified (JH) and may be biased high.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ97B3. Relative percent differences ($\leq$ 18%) were within the acceptance criteria ($\leq$ 35%; $\pm$ 2xCRDL) for the duplicate sample analysis.

ICP-AES SERIAL DILUTION - Acceptable

A five-fold serial dilution was performed for sample MJ97B3. Percent differences ($\leq$ 5%) were within the criterion ($\leq$ 10%) for the serial dilution analysis.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

The sodium result was qualified (U) due to the detected presence of this element in the preparation blank.

The antimony result was qualified (UJL) due to a low recovery for the matrix spike. Antimony may be biased low.

The arsenic result was qualified (JH) due to a high recovery for the matrix spike. Arsenic may be biased high.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

L - Low bias.

H - High bias.

K - Unknown Bias.

Q - Detected concentration is below the method reporting limit / Contract Required Quantitation Limit, but is above the method detection limit.

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1A-IN

09

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ97B3

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

atrix (soil/water): SOIL Lab Sample ID: 0806170-01

evel (low/med): LOW Date Received: 06/19/2008

Solids: 77.1

oncentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7040			P
7440-36-0	Antimony	7.8	~~B~~	N UJL	P
7440-38-2	Arsenic	7.0		N JH	P
7440-39-3	Barium	168			P
7440-41-7	Beryllium	0.47	JQ		P
7440-43-9	Cadmium	0.75			P
7440-70-2	Calcium	3770			P
7440-47-3	Chromium	16.9			P
7440-48-4	Cobalt	4.7	JQ		P
7440-50-8	Copper	7.7			P
7439-89-6	Iron	11800			P
7439-92-1	Lead	59.5			P
7439-95-4	Magnesium	3870			P
7439-96-5	Manganese	224			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	10.5			P
7440-09-7	Potassium	1340			P
7782-49-2	Selenium	4.5	U		P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	193	~~J~~	U	P
7440-28-0	Thallium	3.2	U		P
7440-62-2	Vanadium	19.5			P
7440-66-6	Zinc	177			P

DM 7-14-08

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts: YES

Comments: ROCKS; PLANT MATTER

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

Instrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

Preparation Method: HS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	20.00	2.54
Antimony	206.83	6.00	0.63
Arsenic	189.04	1.00	0.49
Barium	233.53	20.00	0.04
Beryllium	313.11	0.50	0.02
Cadmium	226.50	0.50	0.02
Calcium	318.13	500.00	5.81
Chromium	267.72	1.00	0.07
Cobalt	228.62	5.00	0.08
Copper	324.75	2.50	0.12
Iron	262.83	10.00	0.57
Lead	168.22	1.00	0.47
Magnesium	279.08	500.00	1.53
Manganese	257.61	1.50	0.01
Nickel	231.60	4.00	0.18
Potassium	766.49	500.00	0.23
Selenium	196.09	3.50	1.02
Silver	328.07	1.00	0.07
Sodium	330.24	500.00	21.90
Thallium	190.86	2.50	1.00
Vanadium	292.40	5.00	0.06
Zinc	213.86	6.00	0.14

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

nstrument Type: P Instrument ID: Spectro Ciros01 Date: 01/20/2008

reparation Method: HS1

oncentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Aluminum	308.22	200	25.4
Antimony	206.83	60	6.3
Arsenic	189.04	10	4.9
Barium	233.53	200	0.40
Beryllium	313.11	5	0.200
Cadmium	226.50	5	0.22
Calcium	318.13	5000	58.1
Chromium	267.72	10	0.65
Cobalt	228.62	50	0.75
Copper	324.75	25	1.20
Iron	262.83	100	5.7
Lead	168.22	10	4.7
Magnesium	279.08	5000	15.3
Manganese	257.61	15	0.08
Nickel	231.60	40	1.80
Potassium	766.49	5000	2.3
Selenium	196.09	35	10.2
Silver	328.07	10	0.70
Sodium	330.24	5000	219
Thallium	190.86	25	10.0
Vanadium	292.40	50	0.60
Zinc	213.86	60	1.40

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Bonner Analytical Testing Compa Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

Instrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

Preparation Method: CS1

Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.10	0.040

Comments:

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

ab Name: Bonner Analytical Testing Compa Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

nstrument Type: CV Instrument ID: Leeman02 Date: 12/26/2007

reparation Method: CS1

oncentration Units (ug/L or mg/kg): UG/L

Analyte	Wave-Length /Mass	CRQL	MDL
Mercury	253.70	0.20	0.030

Comments:

USEPA - CLP

12-IN

PREPARATION LOG

Lab Name: Bonner Analytical Testing Comp Contract: EPW06055

Lab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

Preparation Method: HS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
PBS01	07/02/2008	1.00	100
LCSS01	07/02/2008	1.00	100
MJ97B3	07/02/2008	1.00	100
MJ97B3S	07/02/2008	1.00	100
MJ97B3D	07/02/2008	1.00	100

USEPA - CLP

12-IN

PREPARATION LOG

ab Name: Bonner Analytical Testing Comp Contract: EPW06055

ab Code: BONNER Case No.: 37589 NRAS No.: SDG NO.: MJ97B3

reparation Method: CS1

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
S0	07/03/2008		100
S0.2	07/03/2008		100
S0.5	07/03/2008		100
S1	07/03/2008		100
S2	07/03/2008		100
S6	07/03/2008		100
ICV01	07/03/2008		100
ICB01	07/03/2008		100
CRI01	07/03/2008		100
CCV01	07/03/2008		100
CCB01	07/03/2008		100
PBS01	07/03/2008	0.20	100
LCSS01	07/03/2008	0.20	100
MJ97B3	07/03/2008	0.20	100
MJ97B3D	07/03/2008	0.20	100
MJ97B3S	07/03/2008	0.20	100
CCV02	07/03/2008		100
CCB02	07/03/2008		100
CRI02	07/03/2008		100
CCV03	07/03/2008		100
CCB03	07/03/2008		100
CCB05	07/03/2008		100

G Big Wood River and its Tributaries Analytical Data Summary Tables

Table G-1 Big Wood River and its Tributaries Sediment Samples Analytical Results Summary

EPA Sample ID	08254070	08254128	08254108	08254107	08254126	08254106	08254105	08254114	08254104	08254122	08254103	08254115
CLP Sample ID	MJ9755	MJ97B3	MJ9793	MJ9792	MJ97B1	MJ9791	MJ9790	MJ9799	MJ9789	MJ97A7	MJ9788	MJ97A0
Station Location	BG01SD	WC01SD	BR35SD	BR34SD	TC01SD	BR33SD	BR32SD	EC01SD	BR31SD	RC01SD	BR30SD	ER01SD
Description	Background	Warm Springs Creek	Big Wood River		Trail Creek	Big Wood River		Elkhorn Creek	Big Wood River	Clear Creek	Big Wood River	East Fork Big Wood River
Target Analyte List Metals (mg/kg)												
Aluminum	**10400**	**7040**	**5010**	**5730**	**5060**	**7060**	**6990**	**5290**	**14300**	**2160**	**5480**	**6430**
Antimony	R	7.8 UJL	R	R	R	R	R	R	1.8 JQ	R	R	R
Arsenic	**9.6**	**7.0 JH**	**4**	**3.9**	**7.8**	**6.2**	**5**	**2.9**	**7.3**	1.7 U	**5.5 JL**	**7.3 JL**
Barium	**110**	**168**	**53.6**	**90.6**	**169**	**140**	**124**	**122**	**241**	15.1 JQ	**119**	**111**
Beryllium	**0.82**	0.47 JQ	0.38 JQ	0.4 JQ	0.44 JQ	0.48 JQ	0.49 JQ	0.36 JQ	**1**	0.12 JQ	0.46 JQ	0.44 JQ
Cadmium	0.37 JQ	**0.75**	0.16 JQ	0.2 JQ	**1.3**	0.64 JQ	0.39 JQ	0.37 JQ	**2.9**	**0.08 JH**	0.19 JQ	0.7 JQ
Calcium	**4510**	**3770**	**2020**	**2680**	**17900**	**4920**	**3710**	**12300**	**17500**	**8210**	**5280**	**23800**
Chromium	**31.9**	**16.9**	**19.6**	**19.7**	**15.7**	**22.9**	**21.3**	**19.4**	**34.7**	**4.4**	**18.6**	**16.4**
Cobalt	7 JQ	**16.9**	4.4 JQ	4.3 JQ	4.0 JQ	5.1 JQ	5.1 JQ	5.9 JQ	**9.7**	0.37 JQ	4.6 JQ	4.4 JQ
Copper	**11.3**	7.7	**4.9**	**5.4**	**27.9**	**10.9**	**8**	**7.0**	**23.9**	2.1 JQ	**8.4**	**8.9**
Iron	**14600**	**11800**	**9500**	**9710**	**11400**	**12100**	**11700**	**9540**	**16600**	**2300**	**11100**	**11400**
Lead	**23.6**	**59.5**	**12.4**	**22.3**	**15.2**	**30.6**	**29.1**	**42.8**	**112**	**3.4**	**23.9**	**24.7**
Magnesium	**5670**	**3870**	**4090**	**3970**	**9850**	**5310**	**4980**	**3700**	**6850**	767 JQ	**4930**	**5590**
Manganese	**304**	**224**	**167**	**143**	**230**	**203**	**148**	**176**	**543**	**17.6**	**142**	**225**
Mercury	0.14 U	0.13 U	0.048 U	0.055 U	0.072 U	0.14 U	0.075 U	0.057 U	0.12 U	0.17 U	0.16 U	0.16 U
Nickel	**20**	**10.5**	**13.4**	**12**	**34.9**	**18**	**14.9**	**14.8**	**29**	3.9 JQ	**16.2**	**17.6**
Potassium	**1200**	**1340**	532 JQ	**852**	**1390**	**1110**	**1120**	**1050**	**2670**	396 JQ	696 JQ	**1400**
Selenium	5 UJL	4.5 U	4.2 UJL`	4.7 UJL	5 UJL	4.8 UJL	4.8 UJL	4.4 UJL	6.4 UJL	6.1 U	5.7 UJL	5.7 UJL
Silver	1.4 U	1.3 U	1.2 U	1.3 U	0.19 JQ	1.4 U	1.4 U	1.3 U	0.65 JQ	1.7 U	1.6 U	1.6 U
Thallium	3.6 U	3.2 U	3 U	3.3 U	3.5 U	3.4 U	3.4 U	3.1 U	4.6 U	4.4 U	4.1 U	4.1 U
Vanadium	**24.3**	**19.5**	**15**	**15.1**	**60.2**	**22.2**	**21.1**	**20.4**	**34.2**	2.1 JQ	**20.4**	**18.3**
Zinc	**56.7 JL**	**177**	**35.6 JL**	**68.7 JL**	**137 JL**	**125 JL**	**113 JL**	**54.5 JL**	**207 JL**	**19.1**	**81**	**133**

Table G-1 Big Wood River and its Tributaries Sediment Samples Analytical Results Summary

EPA Sample ID	08254102	08254101	08254116	08254100	08254081	08254113	08254080	08254079	08254112	08254078	08254077	08254141
CLP Sample ID	MJ9787	MJ9786	MJ97A1	MJ9785	MJ9766	MJ9798	MJ9765	MJ9764	MJ9797	MJ9763	MJ9762	MJ97C6
Station Location	BR29SD	BR28SD	GG01SD	BR27SD	BR08SD	DC01SD	BR07SD	BR06SD	CC01SD	BR05SD	BR04SD	CG01SD
Description	Big Wood River		Greenhorn Gulch	Big Wood River		Deer Creek	Big Wood River		Croy Creek	Big Wood River		Colorado Gulch
Target Analyte List Metals (mg/kg)												
Aluminum	**5340**	**6370**	**11300**	**6660**	**6360**	**4600**	**5110**	**4610**	**8590**	**4540**	**5210**	**20400**
Antimony	R	R	R	R	R	R	R	R	R	R	R	R
Arsenic	**5.8 JL**	**4.9 JL**	**5.5 JL**	**6.5 JL**	**5.6**	**5.2 JL**	**4.7**	**5.7**	**5.6 JL**	**5.4**	**4.1**	**61.7**
Barium	**108**	**144**	**220**	**127**	**118**	**84.1**	**93.6**	**93.6**	**134**	**74.3**	**163**	**233**
Beryllium	0.46 JQ	0.51 JQ	0.88 JQ	0.5 JQ	0.46 JQ	0.38 JQ	0.37 JQ	0.34 JQ	0.58 JQ	0.33 JQ	0.4 JQ	0.96 JQ
Cadmium	0.34 JQ	0.40 JQ	0.24 JQ	0.39 JQ	0.49 JQ	**0.2 JL**	0.32 JQ	0.25 JQ	0.3 JQ	0.35 JQ	0.41 JQ	**8.2 JH**
Calcium	**4070**	**6330**	**7810**	**6840**	**7960**	**5170**	**5100**	**3950**	**5350**	**3250**	**5720**	**17400**
Chromium	**18.1**	**20.6**	**31.6**	**20**	**19.7**	**14.9**	**16.4**	**15.2**	**24.7**	**15.1**	**17.1**	**49.4**
Cobalt	4.2 JQ	4.7 JQ	8.4 JQ	4.7 JQ	4.6 JQ	3.5 JQ	3.9 JQ	3.9 JQ	6.3 JQ	3.9 JQ	4.1 JQ	14.5 JQ
Copper	**9.5**	**11.2**	**19.2**	**9.1**	**9.9**	**8.0**	**8.4**	**8.4**	**9.8**	**8.9**	**8.7**	**239**
Iron	**10500**	**10400**	**11600**	**11200**	**10800**	**8710**	**9550**	**8880**	**12900**	**9040**	**9240**	**25200**
Lead	**22.4**	**27.6**	**23.0**	**28.5**	**21.6**	**16.7**	**16.1**	**16.8**	**72**	**15.2**	**20**	**14.4**
Magnesium	**4130**	**5610**	**4570**	**5240**	**5140**	**3880**	**4110**	**3850**	**5310**	**3610**	**4220**	**12400**
Manganese	**164**	**112**	**538**	**190**	**152**	**124**	**128**	**113**	**111**	**156**	**95.1**	**308**
Mercury	0.14 U	0.15 U	0.20 U	0.16 U	0.081 U	0.15 U	0.075 U	0.06 U	0.13 U	0.055 U	0.15 U	0.17 JQ
Nickel	**16.8**	**18.4**	**16.5**	**16.6**	**18.2**	**13.9**	**15.1**	**14.8**	**13.8**	**14.9**	**16.5**	**51.5**
Potassium	**830**	**965**	**2040**	**1070**	**1020**	693 JQ	**769**	658 JQ	**1480**	**777**	**848**	**4360**
Selenium	4.9 UJL	5.2 UJL	7.0 UJL	5.5 UJL	5 UJL	5.2 UJL	4.7 UJL	4.7 UJL	4.5 UJL	3.5 UJL	5.4 UJL	10.3 JQ
Silver	1.4 U	1.5 U	2.0 U	1.6 U	1.4 U	1.5 U	1.3 U	1.4 U	1.3 U	1 U	1.5 U	3.2 U
Thallium	3.5 U	3.7 U	5.0 U	3.9 U	3.6 U	3.7 U	3.4 U	3.4 U	3.2 U	2.5 U	3.8 U	5.4 JQ
Vanadium	**20.9**	**23**	**28.2**	**21.2**	**25.4**	**17.6**	**20.6**	**18.8**	**31**	**18.6**	**20**	**80.3**
Zinc	**81.3**	**93.6**	**105**	**112**	**94.6 JL**	**64.6**	**76.2 JL**	**62.7 JL**	**106**	**63.6 JL**	**87.2 JL**	**593**

Table G-1 Big Wood River and its Tributaries Sediment Samples Analytical Results Summary

EPA Sample ID	08254076	08254095	08254125	08254099	08254120	08254098	08254097	08254121	08254096	08254094	08254119	08254093
CLP Sample ID	MJ9761	MJ9780	MJ97B0	MJ9784	MJ97A5	MJ9783	MJ9782	MJ97A6	MJ9781	MJ9779	MJ97A4	MJ9778
Station Location	BR03SD	BR22SD	SG01SD	BR26SD	MG01SD	BR25SD	BR24SD	NG01SD	BR23SD	BR21SD	LG01SD	BR20SD
Description	Big Wood River		Star Gulch	Big Wood River	Mammoth Gulch	Big Wood River		Minnie Moore Gulch	Big Wood River		Lees Gulch	Big Wood River
Target Analyte List Metals (mg/kg)												
Aluminum	**4960**	**4960**	**13800**	**3490**	**15600**	**7980**	**7000**	**16800**	**9110**	**4900**	**13800**	**8150**
Antimony	R	R	R	R	R	R	R	**10.7 JL**	**12.5 JL**	**11.7 JL**	R	R
Arsenic	**4.7**	**3.9 JL**	**48.5**	**5.2 JL**	**25.9 JL**	**7.4 JL**	**7.6 JL**	**330**	**58.7 JL**	**84.4 JL**	**2.2 JL**	**40 JL**
Barium	**91.9**	**106**	**199**	**53.1**	**190**	**133**	**118**	**276**	**128**	**85.4**	**206**	**90.6**
Beryllium	0.35 JQ	0.39 JQ	**0.78**	0.24 JQ	**1.0**	0.63 JQ	0.57 JQ	**0.93**	0.62 JQ	0.4 JQ	**0.71**	0.47 JQ
Cadmium	0.33 JQ	0.61 JQ	**87.9 JH**	**1.8 JL**	**3.1 JL**	**4.7 JL**	**2.8 JL**	**22.9 JH**	**4.5 JL**	**3.4 JL**	0.46 JQ	0.38 JQ
Calcium	**5560**	**8400**	**12100**	**3370**	**7690**	**6770**	**6560**	**21400**	**7330**	**5890**	**5700**	**6870**
Chromium	**16.2**	**14.6**	**28**	**11.4**	**36.2**	**25.5**	**21.4**	**39.7**	**30**	**15.9**	**42.5**	**39**
Cobalt	3.9 JQ	3.7 JQ	**10.4 JL**	2.4 JQ	**10.2**	5.1 JQ	4.8 JQ	**13.2 JL**	6.8 JQ	3.2 JQ	**9.9**	6.7 JQ
Copper	**8.1**	**7.2**	**89.7**	**10.8**	**27.2**	**18.7**	**13.9**	**93.9**	**33.7**	**38.3**	**12**	**12.1**
Iron	**9220**	**7330**	**20200**	**5570**	**22300**	**11000**	**9690**	**32600**	**18800**	**19900**	**22200**	**16600**
Lead	**17.6**	**39.4**	**1530**	**26.4**	**50.1**	**70.3**	**75.7**	**2070**	**735**	**1440**	**16.2**	**438**
Magnesium	**4000**	**3990**	**9440**	**2410**	**8920**	**5020**	**5000**	**11100**	**7440**	**5010**	**9290**	**7300**
Manganese	**112**	**108**	**1460**	**49**	**478**	**124**	**115**	**1610**	**517**	**1930**	**511**	**282**
Mercury	0.14 U	0.14 U	**0.61**	0.074 U	0.11 U	0.16 U	0.11 U	**0.95**	**0.22**	**0.35**	0.14 U	0.14 JQ
Nickel	**15.5**	**13.1**	**59.9**	**11.3**	**36.5**	**21**	**18.9**	**56.4**	**18**	**13.3**	**14.2**	**16.9**
Potassium	**712**	**767**	**3460**	557 JQ	**5910**	1120 JQ	1080 JQ	**4650**	**3990**	**980**	**7470**	**2800**
Selenium	4.9 UJL	4.8 UJL	**12.5**	6.1 UJL	5.4 UJL	10.6 UJL	7.8 UJL	2.3 JQ	6.1 UJL	5.2 UJL	4.7 UJL	5.7 UJL
Silver	1.4 U	1.4 U	**26.2**	1.7 U	1.6 U	0.29 JQ	0.25 JQ	**13.4**	**9.4**	**16.9**	1.3 U	1.4 JQ
Thallium	3.5 U	3.4 U	**4.2**	4.4 U	3.9 U	7.6 U	5.6 U	**4.9**	1.8 JQ	3.7 U	3.4 U	1.8 JQ
Vanadium	**18.9**	**15.8**	**91.1**	**13.8**	**74.3**	**25.3**	**25.2**	**79.7**	**47.4**	**25.1**	**58.9**	**38.7**
Zinc	**71.8 JL**	**114**	**6430**	**205**	**243**	**483**	**291**	**3340**	**866**	**1130**	**98.8**	**333**

Table G-1 Big Wood River and its Tributaries Sediment Samples Analytical Results Summary

EPA Sample ID	08254075	08254074	08254127
CLP Sample ID	MJ9760	MJ9759	MJ97B2
Station Location	BR02SD	BR01SD	TG01SD
Description	Big Wood River		Townsend Gulch
Target Analyte List Metals (mg/kg)			
Aluminum	**4410**	**4140**	**10900**
Antimony	R	R	R
Arsenic	**4.3**	**4.6**	**3.8**
Barium	**90.1**	**69.3**	**129**
Beryllium	0.33 JQ	0.27 JQ	0.53 JQ
Cadmium	0.3 JQ	0.26 JQ	0.27 JQ
Calcium	**4450**	**4520**	**5390**
Chromium	**14.6**	**14**	**53.5**
Cobalt	3.6 JQ	3.3 JQ	**10.4**
Copper	**7.9**	**7.5**	**9**
Iron	**8610**	**8100**	**19100**
Lead	**14.7**	**16**	**2.9**
Magnesium	**3710**	**3480**	**9440**
Manganese	**118**	**106**	**673**
Mercury	0.068 U	0.08 U	0.052 U
Nickel	**13.9**	**13.1**	**18.8**
Potassium	626 JQ	619 JQ	**3910**
Selenium	4.8 UJL	4.8 UJL	4.5 UJL
Silver	1.4 U	1.4 U	1.3 U
Thallium	3.4 U	3.4 U	3.2 U
Vanadium	**18.8**	**15.5**	**50**
Zinc	**63.2 JL**	**68.9 JL**	**46.9 JL**

Bold type indicates the sample result is above the instrument detection limit.

Key:

CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The associated value is an estimated quantity.
L = Low bias.
mg/kg = milligrams per kilogram.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
R = The data are unusable. Tha analyte may or may not be present in the sample.
U = The material was analyzed for, but was not detected above the level of the associated value.

Table G-2 Big Wood River and its Tributaries Surface Water Samples Analytical Results Summary

EPA Sample ID	08254000	08254058	08254038	08254037	08254056	08254036	08254035	08254044	08254034	08254052	08254033
CLP Sample ID	MJ96Y5	MJ9743	MJ9723	MJ9722	MJ9741	MJ9721	MJ9720	MJ9729	MJ9719	MJ9737	MJ9718
Station Location	BG01SW	WC01SW	BR35SW	BR34SW	TC01SW	BR33SW	BR32SW	EC01SW	BR31SW	RC01SW	BR30SW
Description	Background	Warm Springs Creek	Big Wood River		Trail Creek	Big Wood River		Elkhorn Gulch	Big Wood River	Clear Creek	Big Wood River
Target Analyte List Metals (mg/L)											
Aluminum	**256**	**533**	156 JQ	176 JQ	**273**	**201**	**222**	8.3 JQ	**250**	200 U	**361**
Arsenic	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10 U	10.0 U	10.0 U	10.0 U
Calcium	**24600**	**19100**	**25100**	**23700**	**32900**	**25500**	**26300**	**48700**	**27200**	**34500**	**26500**
Iron	**227**	**406**	**140**	**180**	**374**	**206**	**200**	88.1 JQ	**223**	100 U	**345**
Magnesium	3360 JQ	3280 JQ	3320 JQ	3280 JQ	**11900**	**5040**	**5010**	**16400**	**5250**	**19000**	**5140**
Manganese	6.8 JQ	7.6 JQ	5 JQ	6.6 JQ	8.5 JQ	6.1 JQ	6.9 JQ	5.7 JQ	7.2 JQ	15 U	12 JQ
Sodium	1810 JQ	4080 JQ	1740 JQ	2180 JQ	828 JQ	2190 JQ	2400 JQ	63700	2480 JQ	2360 JQ	2240 JQ
Zinc	60.0 U	18.1 JQ	60 U	1.5 JQ	8.0 JQ	2.9 JQ	3.9 U	0.95 JQ	4.7 U	60 U	7.3 U
Water Quality Parameters											
Temperature (^{o}C)	7.3	14.3	10.6	11.7	9.2	11.8	11.9	17.1	12.2	19.3	7.7
pH	7.89	7.83	8.09	8.02	8.08	8.2	8.23	8.73	8.1	8.46	7.38
Conductivity (mS/cm)	0.141	0.169	0.104	0.152	0.243	0.165	0.178	0.385	0.173	0.339	0.181
Dissolved Oxygen (mg/L)	8.74	7.13	8.25	8.08	8.54	8.2	7.89	8.6	8.19	8.5	7.5
Turbidity (NTU)	10	10	10	10	10	10	10	10	10	NR	79
Salinity (%)	0	0	0	0	0	0	0	0.01	0	0.01	0

Table G-2 Big Wood River and its Tributaries Surface Water Samples Analytical Results Summary

EPA Sample ID	08254045	08254032	08254031	08254046	08254030	08254011	08254043	08254010	08254009	08254042	08254008
CLP Sample ID	MJ9730	MJ9717	MJ9716	MJ9731	MJ9715	MJ96Z6	MJ9728	MJ96Z5	MJ96Z4	MJ9727	MJ96Z3
Station Location	ER01SW	BR29SW	BR28SW	GG01SW	BR27SW	BR08SW	DC01SW	BR07SW	BR06SW	CC01SW	BR05SW
Description	East Fork Big Wood River	Big Wood River		Greenhorn Gulch	Big Wood River		Deer Creek	Big Wood River		Croy Creek	Big Wood River
Target Analyte List Metals (mg/L)											
Aluminum	**422**	**344**	**338**	38.1 JQ	**349**	117 JQ	200 U	**280**	**314**	116 JQ	**316**
Arsenic	10.0 U	10.0 U	10.0 U	10 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Calcium	**19500**	**26700**	**26700**	**25800**	**25200**	**28800**	**43200**	**27600**	**28800**	**53200**	**28600**
Iron	**1040**	**330**	**330**	69.1 JQ	**337**	160.0 U	100 U	**260**	**299**	**321**	**303**
Magnesium	**5260**	**5280**	**5240**	**10800**	**5070**	**5300**	4640 JQ	**5440**	**5620**	**8630**	**5520**
Manganese	**17.9**	12.1 JQ	11.4 JQ	**38.5**	11.2 JQ	**27.0**	6.9 JQ	9.3 JQ	12.4 JQ	**64.3**	11.7 JQ
Sodium	853 JQ	2290 JQ	2320 JQ	**5180**	2070 JQ	2500 JQ	4140 JQ	2410 JQ	2720 JQ	**8410**	2610 JQ
Zinc	12.8 JQ	11.8 U	7.3 U	0.89 JQ	7 U	2.4 U	60 U	5.7 U	4.6 U	15.2 JQ	5.1 U
Water Quality Parameters											
Temperature (^{o}C)	5.9	7.3	7.5	17.5	8.1	12.3	14.6	13.1	11.2	15	10.9
pH	8.03	7.65	8.03	8.41	8.36	8.96	8.2	9.1	8.95	7.91	8.95
Conductivity (mS/cm)	0.143	0.182	0.183	0.299	0.177	0.158	0.263	0.171	0.187	0.341	0.179
Dissolved Oxygen (mg/L)	7.46	7.43	7.38	6	8.6	11.92	11.75	12.26	11.67	11	12.31
Turbidity (NTU)	NR	NR	NR	NR	NR	117	40	162	12	5	81
Salinity (%)	0	0	0	0.01	0	0	0	0	0	0.01	0

Table G-2 Big Wood River and its Tributaries Surface Water Samples Analytical Results Summary

EPA Sample ID	08254007	08254140	08254006	08254025	08254029	08254028	08254027	08254026	08254024	08254049	08254023
CLP Sample ID	MJ96Z2	MJ97C5	MJ96Z1	MJ9710	MJ9714	MJ9713	MJ9712	MJ9711	MJ9709	MJ9734	MJ9708
Station Location	BR04SW	CG01SW	BR03SW	BR22SW	BR26SW	BR25SW	BR24SW	BR23SW	BR21SW	LG01SW	BR20SW
Description	Big Wood River	Colorado Gulch	Big Wood River							Lees Gulch	Big Wood River
Target Analyte List Metals (mg/L)											
Aluminum	**322**	**728**	**393**	**460**	200 U	101 JQ	119 JQ	37.4 JQ	200 U	49 JQ	200 U
Arsenic	10.0 U	**19.1 JL**	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Calcium	**26600**	**78700**	**28300**	**26600**	**44100**	**40200**	**28700**	**34800**	**43600**	**39000**	**43200**
Iron	**306**	**848**	**383**	**454**	58.3 U	147 U	**133**	66.5 JQ	12.4 JQ	**138**	12.2 JQ
Magnesium	**5330**	**18000**	**5530**	**5230**	**9070**	**8200**	**5620**	**6710**	**8170**	**13800**	**8020**
Manganese	11.2 JQ	**123**	13.2 JQ	14 JQ	4.6 JQ	6.9 JQ	5.3 JQ	15.0 U	15.0 U	**28.2**	15.0 U
Sodium	2300 JQ	**6610**	2400 JQ	2080 JQ	4900 JQ	4210 JQ	2800 JQ	3500 JQ	4580 JQ	**5470**	4490 JQ
Zinc	6.4 U	**105**	23.1 U	6.3 JQ	10.3 U	8.6 U	3.4 JQ	3.0 JQ	8.3 JQ	0.73 JQ	7.1 JQ
Water Quality Parameters											
Temperature (^{o}C)	8.9	9.2	8.9	8.7	12.9	12.9	9.3	9.2	10.1	10.2	10.9
pH	8.78	8.07	8.72	7.82	7.72	7.82	7.44	7.54	7.74	7.71	7.84
Conductivity (mS/cm)	0.172	0.469	0.176	0.191	0.317	0.288	0.221	0.258	0.318	0.354	0.316
Dissolved Oxygen (mg/L)	12.32	4.04	11.81	7.1	3.3	3.85	5.65	4.75	6.42	3.45	8.36
Turbidity (NTU)	19	4	11	NR	61	NR	NR	NR	NR	NR	NR
Salinity (%)	0	0.01	0	0	0.01	0.01	0	0	NR	0.01	0.01

Table G-2 Big Wood River and its Tributaries Surface Water Samples Analytical Results Summary

EPA Sample ID	08254005	08254004	08254057
CLP Sample ID	MJ96Z0	MJ96Y9	MJ9742
Station Location	BR02SW	BR01SW	TG01SW
Description	Big Wood River		Townsend Gulch
Target Analyte List Metals (mg/L)			
Aluminum	**312**	**230**	200 U
Arsenic	10.0 U	10.0 U	10.0 U
Calcium	**29300**	**32200**	**45100**
Iron	**307**	**214**	56.5 JQ
Magnesium	**5800**	**6280**	**16300**
Manganese	11.0 JQ	8.2 JQ	7.6 JQ
Sodium	2730 JQ	2920 JQ	**6030**
Zinc	5.5 U	12.3 U	60 U
Water Quality Parameters			
Temperature (^{o}C)	11.4	13.2	10.2
pH	8.33	8.53	7.57
Conductivity (mS/cm)	0.191	0.204	0.392
Dissolved Oxygen (mg/L)	8.25	7.51	5.03
Turbidity (NTU)	291	451	9
Salinity (%)	0	0	0.01

Note: Bold type indicates the sample result is above the instrument detection limit.

Key:

% = Percent.
^{o}C = Degrees celsius.
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The associated value is an estimated quantity.
L = Low bias.
mg/L = milligrams per liter.
mS/cm = milliSiemens per centimeter.
NR = Not recorded.
NTU = Nephelometric Turbidity Units.
Q = The detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method detection limit.
U = The material was analyzed for, but was not detected above the level of the associated value.